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Livelihoods, diversification and inequality among the Meru of Tanzania

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Rolf Larsson



Between crisis and opportunity

*Livelihoods, diversification, and inequality
among the Meru of Tanzania*



Lund Dissertations in Sociology 41

Between crisis and opportunity

**Livelihoods, diversification and inequality among the Meru of
Tanzania**

av

Rolf Larsson

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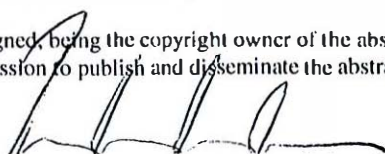
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Title and subtitle Between crisis and opportunity. Livelihoods, diversification and inequality among the Meru of Tanzania	
<p>Abstract</p> <p>Sustained high population growth rates are radically altering the livelihood conditions for small farmers in sub-Saharan Africa. In one of the most fertile and densely settled areas of East Africa, Mount Meru in Northern Tanzania, the size of the population has increased nearly tenfold within the last century. As a consequence, the most serious problem facing farm families is shortage of land. Coupled with this constraint is a complete turn in the national policy towards the agricultural sector in the 1990s. Within short time, Tanzania has moved from state controlled to liberalized markets, a change that has brought new challenges as well as opportunities for the country's numerous smallholders.</p> <p>Historically, Meru households have managed the situation of land shortage rather well. The near universal adoption of coffee cultivation in the 1950s strongly contributed to improvements in food security and living standards despite very high population growth rates. So did income diversification, i.e. the partial reliance on incomes from outside farming. In the 1980s, however, the national economic recession prompted a social and livelihood crisis as markets contracted, coffee prices dropped and small business and employment opportunities dwindled.</p> <p>More recently, economic liberalization has produced a change into high value crops for the domestic markets and, above all, a conspicuous upsurge of opportunities for earning incomes from off-farm work, a trend that is reinforced by the proximity of Mount Meru to Arusha town, the regional capital. Caught between the compelling forces of economic adjustment and land shortage on the one hand, and the rising aspirations and opportunities brought by economic liberalisation on the other, Meru household members have turned their back on farming in favour of various kinds of off-farm employment.</p> <p>The quest for off-farm incomes by rural households is a phenomenon that sweeps across Africa and one that implies the shrinking of the agricultural sector versus other sectors of the economy, i.e. 'de-agrarianisation'. The consequences of 'de-agrarianisation' on food production, income distribution, poverty reduction, and the viability of small family farms, are uncertain, however.</p> <p>The study concludes that, in the Meru case, off-farm employment foremost serves as a means for preserving the small family farm rather than implying a full-scale exodus from agriculture. The study suggests that in spite of a rising gap in incomes between rich and poor farmers, local agriculture continues to be dominated by small family farms, which show great flexibility in adapting to shifting economic and political conditions. Economic polarisation is contained by a high rate of social mobility, income diversification strategies, and by social institutions supporting the right to land for all. Local agriculture continues to be constrained by low productivity, however, a fact that casts doubts on the current neo-liberal policies as the most efficient means of raising agricultural output and incomes in Africa's rural areas.</p>	
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BETWEEN CRISIS AND OPPORTUNITY

Rolf Larsson

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COVER PHOTO

Banana pick-up point along the Arusha – Moshi road
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To Yvonne, Josefin, Julia and Nils

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Lund and Klamby, August, 2001

Rolf Larsson

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Abbreviations & acronyms

ACU	Arusha Cooperative Union
ADAR	Arusha District Annual Report
BOT	Bank of Tanzania
CCM	Chama Cha Mapunduzi (Party of the Revolution)
DALDO	District Agriculture and Livestock Officer
DHS	Demographic Health Survey
FAIDA	Finance and Advice in Development Assistance to Small Enterprise Promotion
FAO	Food and Agriculture Organisation of the United Nations
GSD	Grain Storage Department
IMF	International Monetary Fund
MESODET	Meru Education and Social Development Trust Fund
MOA	Ministry of Agriculture
MAC	Ministry of Agriculture and Cooperatives
NAPB	National Agricultural Products Board
NCPI	National Consumer Prize Index
NGO	Non Governmental Organisation
NMC	National Milling Corporation
PRA	Participatory Rural Appraisal
PRIDE	Promotion of Rural Initiatives in Development
RELMA	Regional Land Management Programme
RRA	Rapid Rural Appraisal
SCAPA	Soil Conservation and Agroforestry Programme Arusha
SEDA	Small Enterprise Development Agency
TANU	Tanganyika African National Union
TCB	Tanzania Coffee Board
TFA	Tanzania Farmer Association
TNA	Tanzania National Archives
UN-WFP	United Nations World Food Programme
URT	United Republic of Tanzania
WB	The World Bank
VEO	Village Executive Officer (Village secretary)
ELCT	Evangelical Lutheran Church of Tanzania
UWT	United Women of Tanzania

PART I

Family farming in
Meru, Tanzania

Introduction

From prosperity to crisis and beyond: family farming and income diversification under land scarcity – the case of the Meru in Northern Tanzania.

A visitor to the southern side of Mount Meru in Northern Tanzania is most certainly struck by the beauty of the fertile countryside with the 4,500 m high mountain peak towering in the background. Equally striking is the richness of the land and the soil, and the prosperity of the smallholders who live from it. The Meru experience higher per capita incomes, living standards and educational levels than most other rural people in the country. Part of the explanation for this lies in the well watered and fertile soils, the good infrastructure, proximity to an urban centre (Arusha) and a long history of cultivation for the market. The lush green and irrigated mountain slopes are covered with an uninterrupted belt of coffee and banana trees giving testimony to the historic significance of these crops as sources of cash income and food.

Our visitor is probably also struck by the buzzing activity along the main Arusha-Moshi road, which skirts the southern part of the Meru heartland and separates it from the arc of large-scale farms and estates circumscribing the mountain since early colonial rule. Large numbers of Meru men and women leave their homes every morning for further transportation along the road. Some head for jobs and businesses in Arusha town about ten kilometres away. Others ferry vegetables to the nearby markets in the local townships of Tengeru or Usa River, or are on their way to do farm work on

the plains below the mountain or collect fodder for their livestock at home. Once they have reached the main road from winding mountain tracks, further transportation is excellent. Only minutes apart, congested minibuses rush commuters to Arusha and to markets and working places along the road. And every morning, pickups ferry loads of bananas and vegetables from the roadside to markets as distant as Nairobi, Tanga and Dar es Salaam.

The daily exodus from the mountain slopes is evidence of the fact that in the course of the last century, wellbeing and livelihoods on Mount Meru have become increasingly dependent on resources that stem from outside the mountain. This geographical expansion of income sources includes circular migration, trade, employment, as well as cultivation in different locations. A parallel development is land intensification through which the volume and value of production per hectare (ha) has steadily increased. The utilisation of external incomes and resources and the intensification of farm production are among the reasons why the adaptation to growing population densities and markets hitherto has been relatively successful in Meru in terms of food security and living standards.

In recent decades, however, the picture of affluence, prosperity and progress has become more complex and contradictory, and the prospects for family farming on the mountain more uncertain. In the deep recession of the Tanzanian economy after 1980 many households experienced real declines in incomes and living standards. And after many decades of rapid population growth, land holdings have been subdivided and fragmented to a point where many people are virtually landless. Economic inequality, political and religious conflicts and social tensions are casting fissures between young and old, neighbours and relatives, men and women, rich and poor, all of whom are struggling and competing over scarce resources.

In the present era of economic liberalisation, the significance of agriculture based livelihoods and of traditional crops like coffee has declined. Coffee has to a great extent been replaced by marketing of alternative farm products (e.g. milk, vegetables) driven by the demand from Arusha town. Even so, the scope for broad-based improvements in living standards from agriculture production appears to be limited, particularly for the young generation facing extremely small holdings. The land degradation experienced by some households is further indication of the constraints limiting per cap-

ita growth in agriculture under present man/land ratios and institutional and economic-political conditions. At the same time, however, there are indications of rising prosperity and incomes for many households as a result of economic liberalisation and increased opportunities for earning income from off-farm sources.

Caught between forces of economic compulsion and crisis on the one hand, and opportunity and hope on the other, local tradition and ways of livelihood are reinterpreted and reshaped. This is a constantly ongoing process. Since before the colonial encounter, young Meru individuals and households have sought out new avenues of livelihood in a social and economic context that has differed from that of their parents. Today, adaptation is required to an unprecedented scarcity of the most important resource of all in a smallholder society, that of land.

At a historical conjuncture when an agricultural basis for social identity and economic life has become increasingly difficult to uphold, a basic issue concerns the viability and future existence of the smallholder or family type of farm, hitherto the dominating unit of production in Meru, as well as in the rest of Africa. What are the prospects for agriculture led economic growth in an area where holdings, on average, barely exceed 0.5 ha per household? Are we witnessing a process by which family farmers are increasingly relying on off-farm livelihoods in order to survive and even prosper on holdings that have become extremely fragmented in size? Or do off-farm incomes and economic diversification signal the beginning of a process with even more radical outcomes regarding the organisation of farm production? Do these changes imply an end for the peasant or family type of farm and mode of livelihood, where those with limited access to land take on a number of non-farm occupations and leave agriculture to a smaller number of large-scale and more specialised commercial farmers?

It is now generally recognised that family farmers are extremely adaptive towards changes in the political and economic environment. Nowhere in the world have market forces dispossessed peasants of their land to any significant extent, although this was once commonly held as the inevitable outcome of agricultural modernisation. Worldwide, the family type of farm remains the dominant form for organising agricultural production. Save for the effects of markets, however, continued population growth in land scarce settings in Africa has once again brought the classical 'agrarian question'

into focus. Can family farmers adapt to a situation of extreme land shortage without giving in to the kind of proletarianisation they hitherto have managed to avoid under market demand and political subjugation from outside?

Research issues

Against this background, it is of particular interest to examine the role of off-farm incomes for agricultural intensification and for development issues such as economic inequality, poverty reduction, prosperity and food security (food entitlement). A basic question is, of course, the balance and relative importance of 'push and pull' factors in the process towards larger reliance by households on off-farm incomes. In particular, we need to examine land scarcity as a 'push' factor versus the new aspirations and life-styles that 'pull' young households into seeking off-farm jobs and/or intensify production on their small farms.

Our focus is on livelihood trends, and how the relationship between agriculture, living conditions and off-farm activities has developed in a historical perspective against the background of expanding markets, growing population and shifting central politics and policies of rural development. The current situation, in which population densities have reached a level where many in the young generation risk being alienated from the land, where soils are reported to be exhausted, and where market liberalisation seems to offer better incomes from outside than from within farming, raises important questions about the conditions of smallholder farming and about the viability of the family type of farm. A crucial issue is if income diversification and off-farm jobs indicate dissolution of the peasantry in accordance with the classical agrarian question and the rise of new occupational classes in rural areas.

The interrelationships between farm performance, off-farm activities and patterns of rural inequality under various levels of population density and growth rates, as well as under different institutional conditions, environmental constraints, opportunities of off-farm income etc., represent a research agenda that bears directly on some of the most pertinent issues facing African rural development today. The study connects to this line of research

by focussing on conditions of rural development in the light of rapid population growth, institutional change and rural-urban interaction.

The study on Meru links up with a number of influential research reports in this field in the 1990s, among them the study on Machakos in Kenya by Tiffen, Mortimer and Gikuchi (1993) and the review on population and market driven agricultural growth in Africa made by Turner II, Hydén and Kates (1993). The publications by Deborah Bryceson and colleagues on 'de-agrarianisation' in Africa has a direct relevance for this study on the Meru (Bryceson, 2000; 1997a; 1997b; 1999; Bryceson and Jamal, 1997).¹ With titles such as "*Farewell to Farms*" and "*Disappearing Peasantries?*", Bryceson points at the process by which rural people in large numbers leave rural areas or agriculture based livelihoods for an urban life or for occupations outside farming; i.e. 'de-agrarianisation'.

The purpose of this study is to shed light on the process that Bryceson calls 'de-agrarianisation' and its implications on issues linked to family farming, agricultural intensification, rural livelihoods, food security and inequality. Mount Meru is in an area with a long-standing production for the market, proximity to an urban centre, readily available opportunities for earning off-farm incomes and a severe population pressure on land. It is therefore an excellent case for a study of this kind.

We may condense what has been said so far into two main streams of empirical issues to be dealt with in this study.

- In the first stream, corresponding to Part II in this book, we describe and analyse how Meru households have adapted to markets, land scarcity (population growth) and institutional and cultural change. Along this line, we are particularly interested in the (changing) role of off-farm incomes as a means of improving rural life by providing an impetus to agricultural intensification and by broadening the range of available income sources.
- In the second stream, we will more carefully analyse 'the agrarian question', i.e. the possible dissolution of the peasantry. The proposition of increasing economic inequality and polarisation has gained renewed interest through the competition for land and incomes that stems from

1 Deborah Bryceson coordinates the De-Agrarianisation and Rural Employment (DARE) Research Programme at Afrika-Studiecentrum at Leiden, Netherlands.

rapid population growth and policies of structural adjustment and economic liberalisation. We will, through a historical perspective, look at trends of economic differentiation and levelling, attempting a tentative answer to the classical question of class formation and of the viability of the family form of agricultural production. This corresponds to Part III in the study.

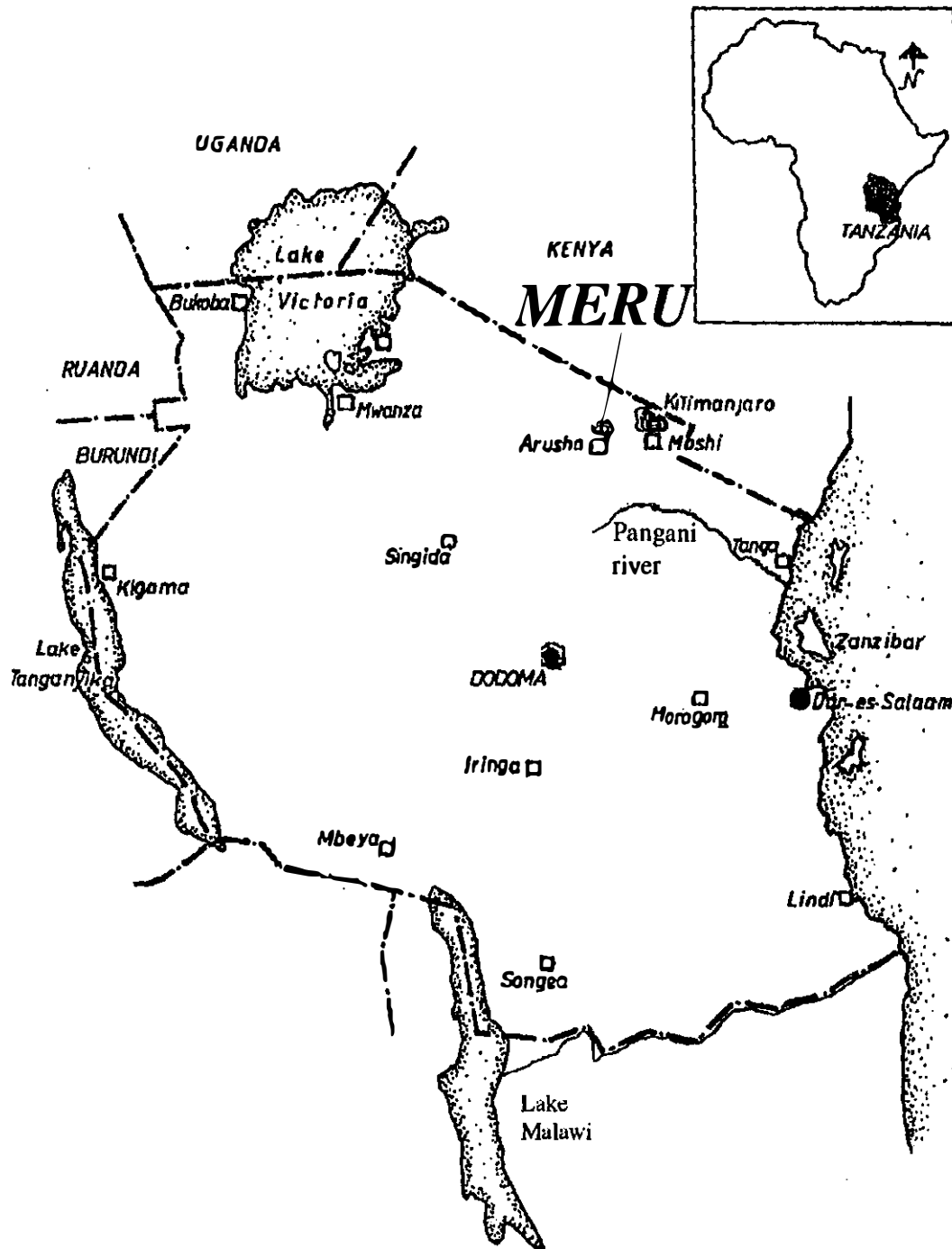
The Study Area

The Meru

Mount Meru, an extinct volcano rising 4,566 m above sea level, is the focal point in Arumeru District, located adjacent to the Kenyan border in Northern Tanzania (Map 1.1; Photograph 1.1). The southern and eastern sides of the mountain hold some of the most fertile soils and well-watered agricultural lands in the country. The mountain slopes stand in great contrast to the surrounding plains, which are characterised by low and irregular rainfall and more difficult conditions for agriculture and settlement. It is hardly surprising, then, that the mountain environment over the years has attracted large numbers of immigrants keen on exploiting its natural resources. Among the first to settle on the mountain were the Bantu speaking Meru, most likely originating from Western Kilimanjaro, which is separated from Mount Meru by a dry plain some 40 or 50 km across. This migration and settlement probably occurred in the 17th century (Spear, 1997, 17ff).²

The Meru share the mountain with another ethnic group, the Arusha, who settled on the southwestern slopes during the first half of the 19th century. The Arusha are a sedentary branch of the pastoral Maasai, the latter inhabiting the open plains below the mountain. These two ethnic groups re-

2 The Meru call themselves *Varwa* (sing. *Nrwa*), which in the local language (Kirwa) means 'those who climb' and refers to the ancestors who went up the mountain from the plains. See also Haram (1999) and Spear (1997, 18). Here, we consistently use the more widespread and commonly accepted term 'Meru', referring both to the people and the location of their residence.



Map 1.1: Tanzania, main features and location of the study area.

side in different parts of the mountain, the present border between them being Nduruma River, located some five kilometres east of Arusha town. Numerically, they form the two dominant ethnic groups in Arumeru District, which holds a population of at least 400,000 people.³ The Meru population

is less than that of the Arusha and probably does not exceed 150,000 people.⁴ It represents an impressive growth since the early 20th century nevertheless. According to estimations made by colonial authorities in the early 1920s, the Meru population at that time was about 10,000 people.⁵

The Meru core area is located within the approximate 'rectangle' formed by, to the west the Nduruma River, to the south the Arusha-Moshi road, to the north the National Forest reserve, and to the east the Usa River-Momela road. Within this area of about 50 km², the Meru form a homogenous ethnic group. Along the Arusha-Moshi road are Tengeru and Usa River townships, both of which serve as important outlet and consumer markets. These townships are expanding rapidly and today they hold populations of various origins (Map 1.2 and Map 1.3).

A large number of Meru reside on the plains to the east and south following outmigration from the mountain in the 1950s and onwards. These expansion areas, being included in what during colonial rule constituted the Meru Chiefdom, stretch from the mountain to the Kikuletwa River near Mbuguni in the south, and to the east towards the District border near Kilimanjaro International Airport (KIA). In the northeast, they include the lands of Ngare Nanyuki. Although these tribal demarcations are no longer officially in use, they are by the Meru considered as important reference points for their social identity and moral claims to land (Map 1.2).⁶

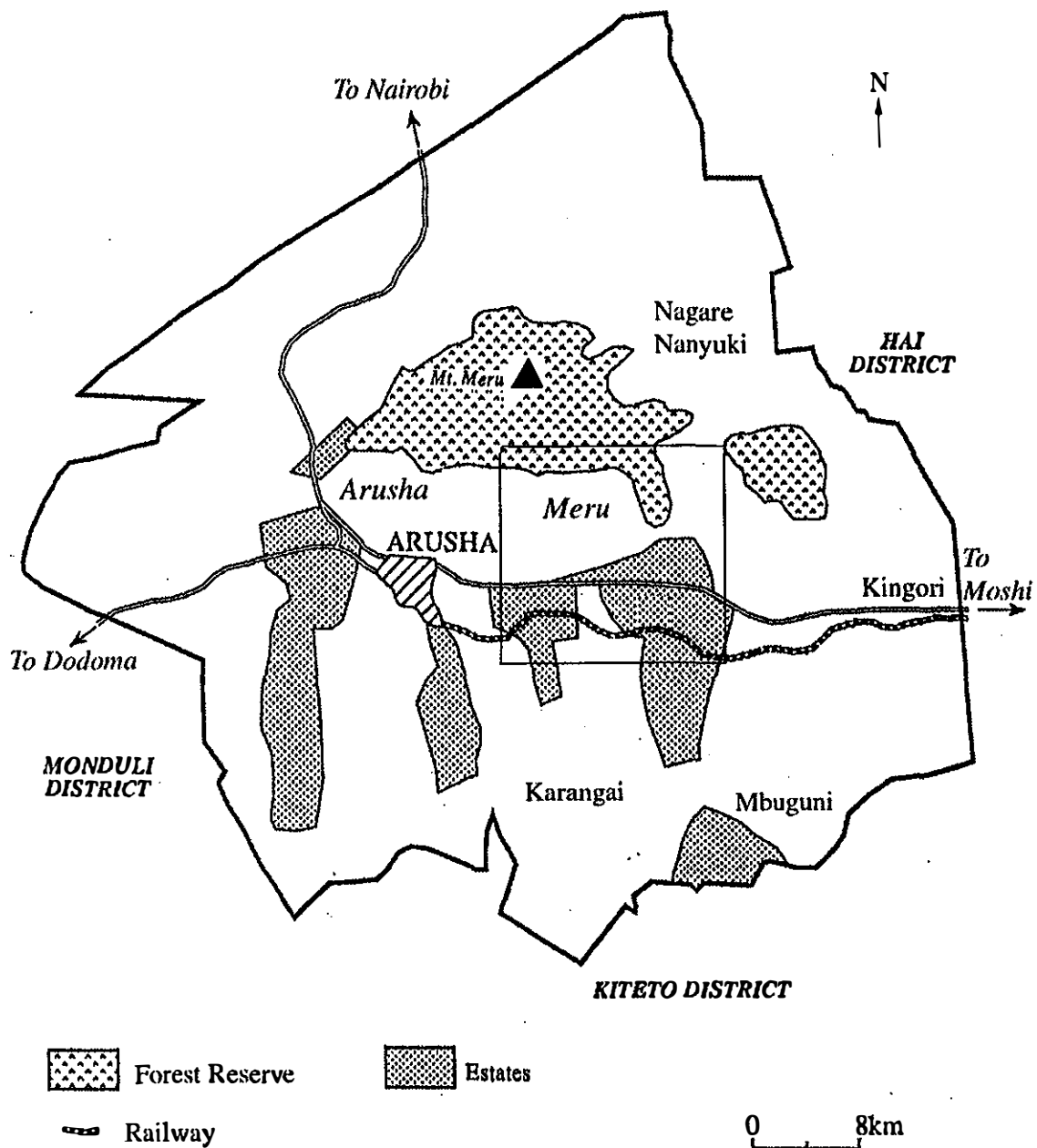
Administratively, Arumeru District is an amalgamation of the former Arusha and Meru Districts, formed after independence on the basis of their correspondence with the 'tribal territories' or chiefdoms held by the Arusha and the Meru under colonial rule. In the colonial administration, these territories formed Arusha District, the borders of which overlap with today's Arumeru District, however, with one important exception. Arusha town

3 According to the 1988 census, the population was about 320,000 people (United Republic of Tanzania, 1991).

4 According to the latest national census, that of 1988, about 62,000 people resided on the mountain in what can be described as Meru villages. In addition, some 88,000 people lived on the plains below the mountain in areas that have been subject to immigration from the mountain. Taking into account both continued population growth since the time of the census and the fact that not all people on the plains are Meru, a likely size of the present Meru population is somewhere between 130,000 – 150,000 people.

5 Arusha District Book, Tanzania National Archives (TNA). A more detailed presentation of population trends will be given in Chapter Four and Five.

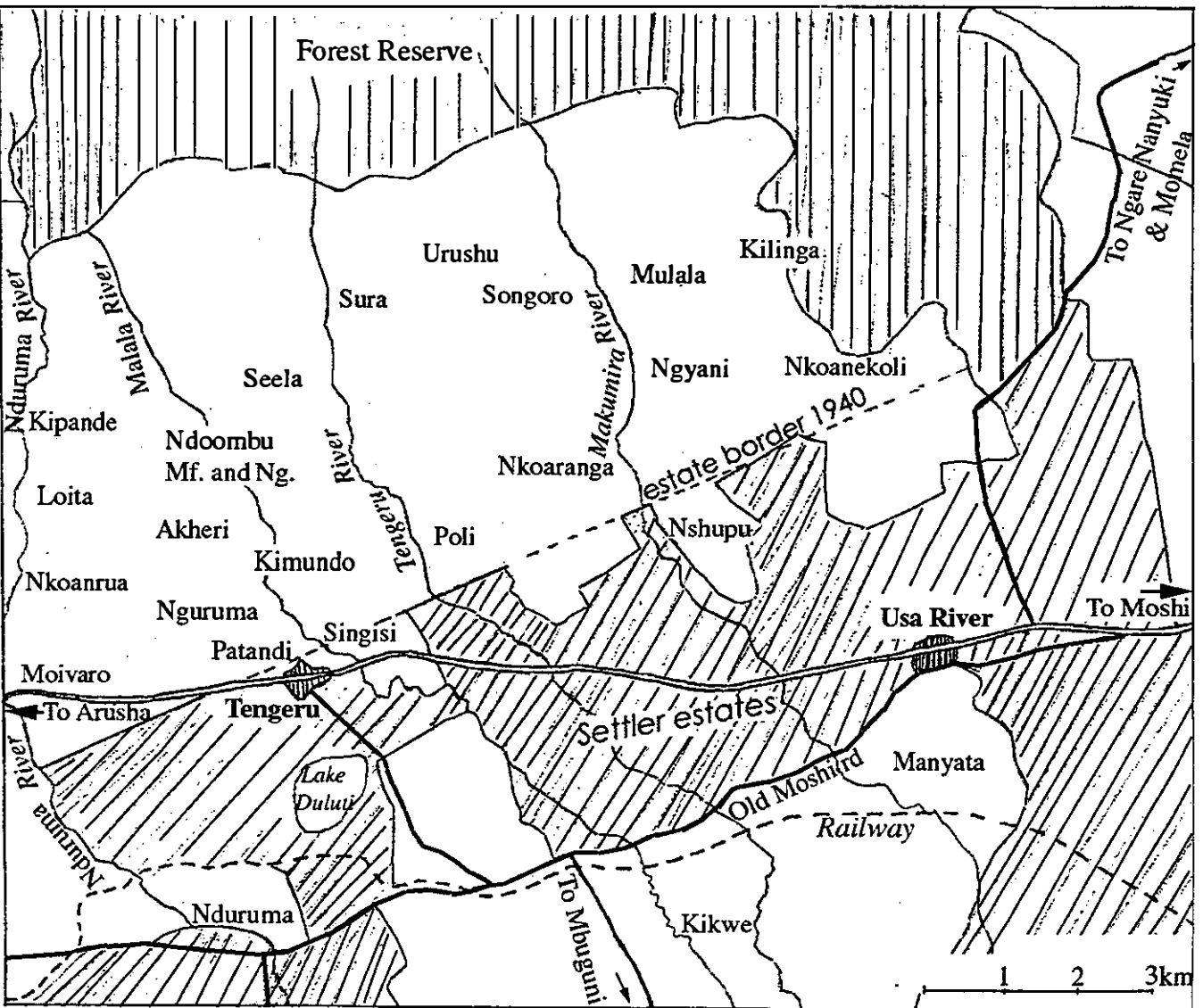
6 Interview: the former Meru Chief, Mzee Sylvanus Kaaya, January 1995.



Map 1.2: Arumeru District, main features*

* modified from Hamilton (1994, 2) and Assmo (1999,76).

and vicinity constitutes its own district, located like an enclave within the borders of Arumeru District (Map 2.1). The District is further divided into minor administrative units, i.e. divisions, wards, villages and subvillages. Area wise, Arumeru District is one of the smallest districts in Arusha Region. It covers some 2,900 km².



Map 1.3: Meru country, approximate location of villages and alienated land*

*Compiled from map 1:50,000 'Usa River' and air photographs (1972 and 1980, Bureau of Survey and Mapping, Dar es Salaam).

Political and economic background of Tanzania and Meru

Colonial period 1885-1961

Attracted by the favourable climatic and agricultural conditions, European settlers and Christian missionaries came early to the highland areas of East Africa, including Mount Meru. In 1885, Tanganyika was declared a German protectorate forming part of German East Africa (Matthews, 1998, 1065). By 1890, Lutheran missionaries and European farmers growing coffee had settled at Kilimanjaro (Sayers, 1930; Spear, 1997). During the first years of the 1900s similar developments took place in Meru.



Photograph 1.1: The Northern Highlands of Tanzania. The mountains of Kilimanjaro and Meru (background) offer some of the most favourable conditions for agriculture and human settlement in Tanzania.

From Arusha, where a military post and trading station had been founded around 1900, the colonial administration organised a far-reaching granting

of prime agricultural land to German and Boer settler farmers during the first decade of the 1900s. Within a short time, the Meru and Arusha found themselves locked in by an “iron-ring” of alienated land effectively preventing their expansion to the fertile lands at the foot of the mountain and to the grazing grounds on the plains (Map 1.2, Map 1.3).⁷

Throughout the colonial period, this early land alienation and the subsequent struggle over land by the various groups present in the area, remained a constant preoccupation of the colonial administration. After the First World War, the British replaced the Germans as the colonial power, administering Tanganyika in the form of a League of Nations mandate and after 1946 as a UN trust territory (Matthews, 1998, 1065). British policy as regards land distribution was not much different from that of the Germans, however, and as the African population was increasing rapidly, conflicts over land escalated and eventually culminated in the famous Meru Land Case in the early 1950s.⁸

The Land Case did not solve the basic problem of land distribution in the District, but it had a strong impact on the political consciousness of an educated fraction of the Meru population who rose to political power as a consequence. These new leaders challenged British supremacy and demanded a more representative constitution than that of the Native Authority installed by the British. The Land Case contributed to the formation of the Tanganyika African National Union (TANU) and the subsequent struggle for Independence. The 1950s was also a time of social and economic progress. Following favourable prices for colonial export crops in the post-war period, smallholder coffee cultivation thrived on Mount Meru. As a result, per capita incomes, living standards and educational levels increased with the effect that at independence, the Meru were among the most educated and prosperous people in Tanganyika.

Following the Meru Land Case was also the official offer of more land on the plains below the arc of settler estates. In a flurry of agricultural expansion in the 1950s and 1960s, the Meru took up complementary holdings on the drought prone, hot and malaria stricken plains they had avoided since they

7 The term “iron ring” has been used by several authors to describe the pattern of alienated land surrounding Meru native territory. See, for example, Nelson (1967), and Spear (1997).

8 A more detailed account of these events is given in Chapter Four.

first set foot on the mountain some 300 years earlier. The reason for this change in attitude was a combination of economic compulsion and opportunity. Faced with shortage of land for food crops at their home and planting what land they had there in coffee, land on the plains offered a temporary relief to the congestion that had built up on the mountain. Holdings on the plains were used mainly for food crops (i.e. maize and beans) and as grazing grounds for cattle.

Independence, African Socialism and Structural Adjustment, from 1961 to present.

Tanganyika gained Independence in 1961 with Julius Nyerere as its first President. In 1964 it formed a union with Zanzibar and was renamed United Republic of Tanzania, or simply Tanzania. Following Independence, Tanzania embarked on a 'socialist' path to development that became known as 'African Socialism'. The socialist strategy, as formulated in the famous Arusha Declaration in 1967, emphasised self-reliance, equality and human development. It implied nationalisation of private owned companies in manufacturing, transportation and marketing, the establishment of large governmental or parastatal farms and a strengthening of the state bureaucracy and the party versus the private sector, the trade unions and the farmers' cooperative movement.

The most radical and far-reaching move by the government was the operation named 'villagisation' by which most of the scattered rural population was resettled and concentrated into planned villages (i.e. *Ujamaa vijijini*).⁹ In view of Tanzania having an essentially rural population depending on subsistence cultivation, the government realised that economic growth and prosperity must necessarily derive from raising agricultural output by linking producers to the market. This was to be achieved through communal cultivation of 'collectively' owned fields using large-scale methods and modern inputs. While considerable progress was met in improving the literacy and health standards of the population in the Ujamaa villages, output performance in agriculture was poor with inefficient management and

9 At the height of African Socialism (1977) the only allowed party, TANU, was renamed CCM (Chama Cha Mapundizi, Party of the Revolution).

shortages of inputs contributing to low levels of production (Van Buren, 1999, 1069).

Adding to these difficulties was a number of external shocks, such as the oil crisis and the war with Uganda in the 1970s. Being near economic collapse and heavily indebted, Tanzania had nothing but to comply with IMF and World Bank conditions of fiscal and political adjustment for continued donor assistance. By mid 1980s a radical economic and political reform programme was on its way. This implied a reorientation from socialism to market economy, from state control to liberalised markets, a stop for deficit fiscal funding, devaluation of the currency and adoption of a new multi-party democratic constitution. It has also implied a new land legislation allowing for privatisation of land.

On Mount Meru, the good infrastructure and permanent cultivation of coffee had prevented households from being resettled and land from being cultivated in a collective manner as was the intention and partial result of the villagisation campaigns of the mid 1970s. On the mountain, African Socialism was noted, among other things, as free access to health care and primary education. However, it also meant an increasing politisation of village affairs, abolishment of the farmers' independent coffee cooperative and of private trade and transportation of crops. As the economic crisis spread and deepened, the purchase power of agricultural and salary incomes declined. The public health care, education and transport systems fell into decay, and a chronic shortage of consumer goods emerged.

While the overall positive effects on agricultural performance and household incomes of structural adjustment and economic liberalisation are uncertain for the country as a whole, partly since world market prices for agricultural exports have declined in the interim, there are indications that incomes and living standards may have improved in Arusha area. Mount Meru is strategically located along the highway between Nairobi and Dar es Salaam, and the regional capital and tourist entry point, Arusha, is within easy reach by local commuter buses. Arusha town is an important outlet for agricultural produce and an impetus for local business and employment. Its economic expansion is partly a result of the burgeoning tourist industry and of the capital that flows into the area following economic liberalisation.

In recent decades, there has been a relative decline for coffee and an increase for products aimed for the domestic urban market, e.g. milk, vegeta-

bles, bananas etc. The increase of off-farm income opportunities represents another conspicuous change. Small businesses abound, building activities flourish, and for the first time in two decades, common consumer goods are generally available in the shops and at local markets.

The overall most pressing problem for Meru smallholders is land scarcity. With population growth continuing unabated in the post-independence period and with the colonial legacy of land distribution largely unresolved, per capita availability of land has declined to a point where many people are nearly landless and are forced to seek off-farm incomes for their livelihood. The highest man/land ratio in Meru was found in Singisi village, located near Tengeru Township along the Arusha-Moshi road. In Singisi, the available land barely exceeds 0.3 ha per household and population density approaches 2,000 people/km².

Smallholder or family farming on Mount Meru

The overwhelming majority of farmers in Meru are smallholders, cultivating small farms with essentially family labour and using part of the farm production for home consumption. Due to the favourable conditions for agriculture on the mountain and the dense population, farms are generally smaller than the country average. Farm size increases, however as one moves from the mountain down to the plains, a circumstance foremost reflecting the different climatic conditions and population densities characterising Arumeru District.

Although Meru farmers for historical reasons are more integrated into markets than most other cultivators in the country, the domination of smallholders in Meru is consistent with the pattern for Tanzania as a whole. Tanzania has an essentially rural based population and the agricultural sector encompasses more than 80 per cent of the workforce and three quarters of the total population (World Bank, 2000, Table 1.1 4). According to the World Bank, 99 per cent of Tanzania's about 3.5 million farm households cultivated less than five ha each, and 77 per cent of them had farms less than

one ha in size (World Bank, 1994b, 226). The vast majority of households produce both for subsistence and for sale.

In Meru, coffee, milk, and bananas are the main cash crops, with vegetables (especially tomatoes) having emerged strongly as an important cash crop candidate in recent years. In 1995/96 when a household survey for this study was carried out, these four products constituted the most important *farm* income for nearly 94 per cent of all investigated households. Only a small portion of households (3.2 %) had no farm produce at all to sell, the main reason being lack of land (Table 1.1).

Things change rapidly, however, and the period after 1996 has been marked by a further decline in the role of coffee as income earner and a corresponding lift for vegetables, especially tomatoes. In the villages close to the Arusha-Moshi road, there has been a massive uprooting of coffee trees in favour of tomatoes and other vegetables fetching good prices and quick returns at domestic markets. The figures for coffee and vegetables given in the Table should therefore be somewhat adjusted in order to reflect today's situation.

Table 1.1: *Main farm produce and farm income sources of Meru households*

Farm produce	Households producing on mountain (%)	Households selling (%)	Main farm income source (hh/ in % of column total)
Bananas	92.1	83.5	11.3
Coffe	84.4	83.3	40.8
Milk	77.8	64.6	35.7
Maize	54.7	12.1	2.2
Fodder grass	56.5	1.4	0.0
Beans	39.3	5.6	0.1
Sweet potatoes	27.8	15.7	0.5
Vegetables	30.4	24.5	5.8
Cassava	9.2	0.0	0.0
Irish potatoes	4.1	0.7	0.0
Other farm produce	3.2	3.0	0.3
No farm produce	0.5	3.2	3.2
Total	-	-	100.0

Total no. of households 753, missing 6-10. Source: author's survey, see Chapter Three.

Most households produce both for the market and for home consumption. Bananas, for example, is a staple food crop but also an important cash crop. The same is the case for milk and vegetables, which for many households have replaced coffee as the main generator of farm income. Some crops are grown mainly for home consumption but find their way to the market if there is a surplus or households are in need of cash. Maize and beans are such examples. Within the area for coffee and bananas, located approximately between 1,200 and 1,600 metres, maize and beans are grown only on patches of steep land or along riverbanks or are sometimes intercropped with coffee and bananas. Above the coffee-banana belt, maize and beans dominate the landscape up to the forest boundary at about 1,800 meters. Households that have their homesteads on the central mountain slopes are the ones growing maize in this area following the short rains in October/November, while during the long rains in March-May, temperatures in this highland area are normally too low for maize to do well (see Figure 1.1 for agroecological zones).

Apart from this general pattern, there is a local geographical variation in the orientation of agriculture depending on water and land availability, climatic conditions, access to markets and infrastructure endowments (Figure 1.1). For example, while nearly all households (88 %) in the villages bordering the forest boundary cultivate maize within their villages, this is the case only for about one third (29 %) of the households in the villages near the main road. In Singisi village, where land is particularly scarce, maize is grown by only 9 per cent of the households. Sweet potatoes are almost exclusively grown in villages higher up the mountain where it constitutes an important cash crop but are almost absent in the villages near the main road. Vegetables, on the other hand, are preferably grown on the lower mountain slopes in the area known as West Meru. Here, ready access to transport and irrigation and favourable temperatures facilitate the cultivation of vegetables for the market.

In mountain villages, sale of milk has overtaken coffee as the main income source. This is partly on the basis that the high altitude and prolonged rainy seasons makes coffee less suitable. The cooler temperatures are suitable for graded dairy cows, however, and households in this area allocate a larger share of the farm for the cultivation of fodder grass compared to the situation in the villages further down the mountain.

Transect south-eastern mountain section. Mountain peak – Tengeru – Mbuguni

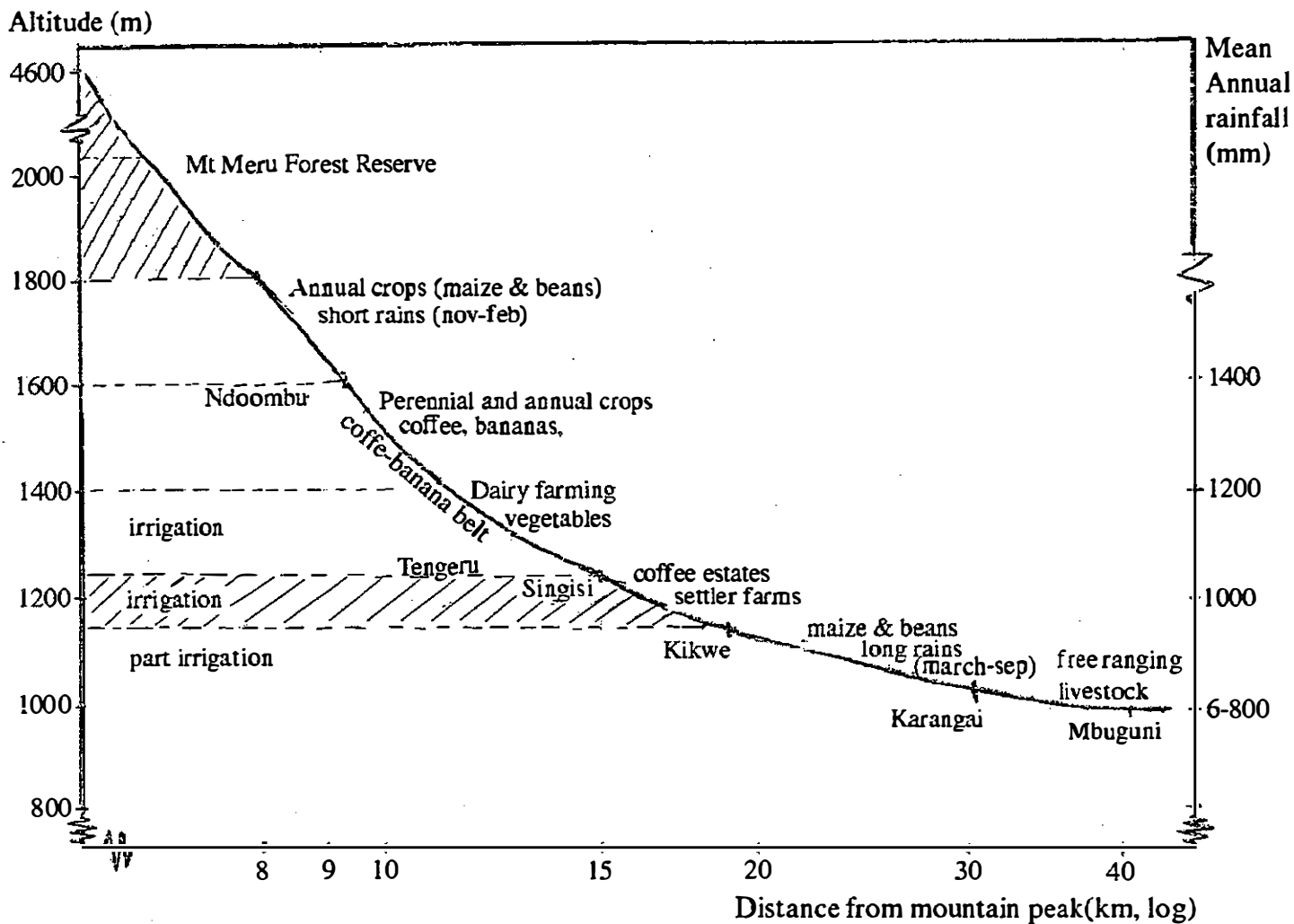


Figure 1.1: Agroecological zones, altitudes and mean rainfall in Arumeru District*

*Compiled from the agroecological classifications presented in Mlay (1982), Lyimo (1993), and Baral (1993).

Coffee is, of course, foremost located in the area that has become known as the coffee-banana belt, i.e. the central and lower mountain slopes bordering the settler farms and coffee estates. The integration of a variety of crops below the dense canopy of coffee and banana trees, as well as trees grown for fruits, fodder or timber, is typical of this area. An intricate network of irrigation channels boosts the production capacity of the land. The keeping of cows and small livestock is essential and the use of animal manure is the main way by which soil fertility is regenerated. Land preparation within the coffee-banana belt is entirely done by hand (the hoe). This is the most populated area of the mountain with densities, on average, being around 1,000 persons/km².



Photograph 1.2: The 'coffee-banana belt'. The good rainfall and fertile soils sustain a dense vegetation of banana and coffee trees across the southeastern mountain slopes.

The bimodal rainfall pattern of this area, with a mean annual rainfall exceeding 1,200 mm and with irrigation as an additional option, makes agriculture a year-round activity (Lyimo, 1993). There is no marked slack season, only periods that are more or less busy. The intensive livestock keeping

with stalled-in dairy cows, for example, is such a regular and laborious activity. Household members are involved in the daily provision of fodder grass that they cut from fields and roadsides on the plains and in most cases carry on their heads to their mountain homesteads. On top of such daily chores, a particularly labour intensive period occurs in February-March when land preparation and planting is done on the plains, requiring the temporary absence or daily commuting of household members from their homes. Another busy period begins in August-September with the harvesting of lowland maize. This coincides with and is followed by the coffee-picking season.

Households residing in the coffee-banana belt grow most of their maize and beans on the plains to the south and east below the arc of settler estates. For farmers in Singisi village, for example, where pure stands of maize are nowhere to be found, nearly four out of five households (78 per cent) have access to complementary plots on the plains for growing food staples, mostly for home consumption.



Photograph 1.3: On the upper mountain slopes, the landscape is more open as coffee gives way to maize, planted after the short rains in November and harvested in February.

East of the mountain, the climate is dryer and coffee and bananas give way to maize and beans. Farming in this area depends on rainfall, farm sizes are larger, population density is lower and irrigation is still undeveloped compared to the coffee-banana belt. In this area, ox-driven ploughs and tractors have replaced the hoe in land preparation for the cultivation of maize and beans.

As we approach the cultivation frontier at the District boundary to the east and south, the main form of land use is extensive livestock keeping of traditional zebu cattle, complemented by rotational cultivation of maize. In this drought prone environment, making up almost half the District surface area, agriculture is a hazardous activity with crops regularly failing due to low and irregular rainfall (averaging 600-800 mm per annum) (Lyimo, 1993). Some farmers in these areas are wealthy farmers from the mountain cultivating in a large-scale and mechanised fashion.

Social and political organisation of the Meru

From the brief background outlined in the previous sections it should be clear that the Meru over the last century have experienced profound social change stemming from both internal and external forces. Pinpointing what are genuine Meru institutions in this situation is not easy, since social and political institutions are constantly reinterpreted and given new meanings.¹⁰

Among the more stable social characteristics of the Meru are those related to patriarchy. The Meru descent line is patrilineal and residence is patrilocal, a system that has survived intact over several generations. Within this system, however, changes have occurred. The social division of labour according to age and sex, and the concept of 'traditional leadership' is a moving target in this respect. For example, the incorporation of the Maasai age-

10 Historical perspectives on the social and political organisation of the Meru are found in, for example, Puritt (1970) and Spear (1997). For more recent developments, see for example Haram (1999), Kelsall (1998a; 1998b; 2000a).

grade system in Meru social life during the late 19th century and the subsequent influence of the warrior age-set, the *murrān*, undermined the political power of clan elders and the *mangi* (the Chief). However, this situation partly changed as under colonial rule a Native Authority was created and the political supremacy of the chief and his councillors was restored. But chiefdom under colonial rule was radically different from what it had been before. It had a different meaning, it required the performance of new functions defined by the colonial administration and it created forms of social hierarchies and patronage, which in the 1950s erupted in a crisis of constitutional legitimacy and accountability of the Native Authority. Later, following independence, a new political structure under African Socialism was implanted from above, complementing but not replacing the 'informal' spheres of influence held by 'traditional' leaders.

Similarly, the introduction of Christianity and opportunities for market exchange and labour employment had an eroding effect on the age-grade or age-set system (*rika*, pl. *marika*). While Christianity, through the Lutheran Church and its missionaries, on the one hand preached against polygamy and other 'pagan' customs, it probably had a conservational effect on the traditionally patriarchal social order on the other. Later, as increasing opportunities for female education and employment were realised in the post-independence period, women's conditions improved generally, although this by no means should be taken to mean that women today enjoy opportunities equal to those of men.

Although most of the functions of the age-set system are gone and the initiation ceremonies that used to accompany individuals through the life cycle only are exercised in a symbolic fashion, if at all, the age-grade system still serves as a reference and a guide for personal conduct, whom a person can marry, must pay respect to and which persons can be commanded for communal type of work, village representation etc. An overview of the age-set system is given in Table 1.2.

Table 1.2: Age-sets of the 20th century.¹¹

Age set	Born (mean year)*
Kisali	1895-1925 (1909)
Sitimu	1911-33 (1922)
Seuri	1927-49 (1938)
Utalala/Rocket	1941-69 (1955)
Kakisha	1957-73 (1965)
Kilowiyo	(1975 or later)

*Ranges refer to \pm 2std from mean.

The clan and lineage system provides another example of the changing content and function of an institution that appears relatively conservative in form. For many decades, clan leaders played a minor social and political role. With the growing shortage and value of land, the importance of clan leaders has gradually increased and their organisation and leadership have been strengthened and become more hierarchical and akin to a modern type of organisation. At the same time, however, shortage of land and external pressures towards land commercialisation challenge clan elders' authority over its distribution.

Hitherto, clan elders have been guardians of the customary land tenure system, implying that every male heir has a right to a piece of his father's land. Since settlement on the mountain was not disrupted by the villagisation policy, customary tenure has gradually evolved under the pressure of a growing population from being a usufruct right to land for subsistence into what now are permanent and inheritable holdings which are individually owned and cultivated. Virtually all land on the mountain is under this form of individual ownership. Although the owner may sell land, in a moral sense it still belongs to the clan and the family lineage, and the consent of clan leaders and lineage elders is needed for all forms of land transactions. Sale and purchase of land is restricted to clan members and neighbours, a rule that has become increasingly difficult to uphold in the villages adjacent to the expanding townships of Tengeru and Usa River as wealthy people from outside seek to buy property there. With rising competition for land and prices for property rocketing, with a new land legislation allowing for the

11 The years indicated are based on the author's survey of 579 male household heads. They divert somewhat from the ranges given by, for example, Spear (1997,29) and Puritt (1970, 46-8).

formal privatisation of land, with gender and ethnic dimensions added to the struggle for land, and with the historic and unequal land distribution between settler and smallholder farms yet unresolved, land is likely to be the focus of social and economic struggle on the mountain for many years still. In the future, customary tenure institutions may well prove inadequate to manage these challenges.

These examples illustrate that the evolution of institutional change in Meru does not lend itself easily to a model that suggests the wholesale rejection or replacement of old forms for new ones. Rather, new institutions are formed upon old ones, adding new layers of norms and conduct to those already there. What is striking is the partial survival of 'traditional' institutions like the clan system, the age-grade system and the patriarchal order. Despite the presence of formal administrative structures and a modern legislation, 'traditional' institutions and leaders continue to play an important role in the lives of the Meru. In a both complementary and contradictory fashion, the informal and the traditional mix with the formal and the 'modern'. Traditional leaders, the formal administration and various NGOs, notably the Church, form local institutional structures that partly overlap with one another and where the borders between them are partly blurred.

At independence, age-grade and clan leaders formed the *Mringaringa*, an informal council of traditional leaders defending but also reformulating and reinterpreting the Meru tradition at a time when the Nyerere administration was installed in Meru and the colonial invention of Chiefdoms was abolished. The *Mringaringa* worked in cooperation with the formal administration, the Church and the farmers' cooperative, the latter emerging in the 1950s as a result of the growing political and social consciousness of the Meru and at the time spearheading much of the social and economic development that took place on the mountain. It is in a way typical, that leaders in these institutions, which trace their origins to different times and circumstances, quite often are the same persons. They draw for legitimacy and resource accumulation on several institutional layers simultaneously.



Photograph 1.4: Meru clan elders' organisation, Mringaringa, having a meeting under the 'sacred' trees at Poli village,

In the colonial period, especially, the Lutheran Church was an important institution extending education and modern health care to the Meru populace, and as a consequence spread new values and norms of conduct. Today, virtually every person on the mountain nominally belongs to the Christian faith. After independence, the government performed most of the development functions previously provided by the Church, with the latter declining in relative importance. With the economic and political crisis of the 1980s, and a subsequent loss of confidence by the public in the formal administration, the Church has regained some of its earlier significance in social development. Rather than entrusting the District council or local party branches with funds for development, prominent leaders (including politicians) have placed development funds in the safe harbour of the Church. In this way, the first secondary school in Meru was financed through a cess on coffee incomes and built on the Church property in Makumira in 1973. This was also the organisational basis of the MESODET (Meru Education and Social Development Trust Fund), formed in 1989 by a Meru elite with the pur-

pose of boosting social development in the midst of economic crisis (Kelsall, 1998a, 14).

Another consequence of the economic crisis is the increased presence of donor funded NGOs in the area. Although, the presence of NGOs is patchy and their influence and capacity to deliver development vary considerably, they are generally considered trustworthier than the formal administration (see for example Kelsall, 2000b).

In the 1990s, however, the influence of some of these institutions (the MESODET, the Mringaringa and the Church) declined following a complex religious turmoil that beset Meru area during the first half of the 1990s. The igniting spark was a strain of Christian puritanism that originated from outside Meru, specifically from the Lutheran diocese headquarters in Moshi, Kilimanjaro. It caused a decisive split of the Meru people, many of whom for some time had felt side-stepped in the distribution of the Church' resources between Kilimanjaro and Meru. Apart from being a struggle over the resources held by the powerful and wealthy Church, the conflict contained dimensions of ethnic patriotism, traditionalism, economic inequality and social frustration stemming from economic crisis and land shortage. Power aspirations and alliances formed by individual and influential stakeholders gave the conflict a political dimension and caused the party divisions in the parliamentary elections of 1995 to partly overlap with those of the religious cleavage. The conflict causing seven deaths and extensive material damage throughout Meru has paralysed the functions of the Mringaringa, the MESODET and the Lutheran Church. The latter, now separated from Moshi, has been divided into two branches but with unresolved tensions still looming below the currently calm surface (Baroin, 1996; Haram, 1999; Kelsall, 1998a; Moore, 1996).

Space does not permit a thorough penetration or discussion of this complex religious conflict nor of institutional issues in greater detail. More than anything else, the examples given are intended to illustrate the constantly changing content and character of present institutions and the significance of external factors in shaping life conditions in Meru. Perhaps, the present situation can be best described as an institutional vacuum in which previously important institutions are changing at the same time as the governmental and formal administration (and its elected politicians) are facing a legitimacy crisis.

Outline and summary of the book

Following this introduction is a series of chapters covering central theoretical, methodological and contextual aspects of the research issues. These form *Part I* of the book. Chapter Two provides a broad based conceptual orientation to the family based form of agrarian production, with focus on Africa and Tanzania. In Chapter Three we present and discuss the fieldwork and methods used in the study, the kind of data generated and their relevance for the research issues. The chapter also includes a presentation of the Meru villages sampled for the study. Chapter Four and Five provide the historical background to the land scarcity situation that has developed on Mount Meru during the 20th century and serve as an entry point to the subsequent analysis.

In *Part II* of the book, after a short theoretical and contextual introduction, focus is on the research issues linked to agricultural intensification and the ongoing diversification of rural incomes in Meru. We will explore the links between the two, and discuss the implications of off-farm incomes and 'de-agrarianisation' for the livelihoods, food security and well-being of Meru households.

In *Part III* of the book, after a theoretical overview in Chapter Thirteen, we bring the current discourse on diversification into the classical debate on the differentiation and dissolution of the peasantry. We explore inequality and social mobility in relation to the 'push and pull' factors of economic diversification, in relation to competition for land invoked by population growth, and in view of different socio-economic characteristics of the Meru households.

In *Part IV*, we pull together the findings presented in the empirical chapters and discuss them in light of the research issues and theoretical reflections outlined in Part I, II and III.

Family farmers. A conceptual orientation and application to Africa and Tanzania.

Introduction

The widespread concern about the state of African agriculture is partly based on recognition of its significance for the continent's food security, overall economic growth and prospects of reducing poverty. In this, smallholder or peasant farming plays a crucial role. Despite the generally gloomy picture presented of African agriculture in the literature, we can see that the small family farm has compared favourably with previous attempts of promoting large-scale farming under private or state capital or under collective management. In Tanzania, for example, despite the favours given to European owned estates during colonial rule and, in the post-independence period, the huge resources transferred to government estates, family based farming has throughout remained the backbone of the rural economy.

Seen from a wider international and historical perspective, the viability of the smallholder sector is not a unique Tanzanian experience. The existence of family based farming across a vast spectrum of ideological, political and economic contexts bears testimony to the capability and potential of this form of production compared to farms organised on an industrial or business basis.

This being said, there are of course in many other respects differences between Tanzanian family farmers and those of other geographical, political and historical contexts, just as there are differences between smallholders

within a diverse country such as Tanzania. The family farmers on Mount Meru, for example, differ from most other Tanzanian cultivators because of an early integration into what are now relatively developed markets, proximity to a dynamic urban centre (Arusha town) and a favourable physical and infrastructure environment. Regardless of context, however, the small family farm remains the overwhelmingly dominant form of agricultural production, not only in Tanzania but also in the developing world as a whole. Also, in developed countries family farms constitute the most common type of farm, albeit not always small in size.

To a great extent, the labels we use for the family type of farming, e.g. 'smallholders', 'peasants' and 'family farmers', largely overlap in empirical substance. Each of them represents a *form* of production that is characterised by the flexible use of family labour for diverse sources of income, meaning that households engage in a range of activities and incomes, most of which are related to agriculture but some of which may be located outside the farm. Each definition assumes that the farm household is the major unit for managing and organising both production and consumption, and each assumes that consumption and social considerations influence economic decision making and resource use. The definitions differ, however, in the significance each of them pays to the role of markets for farmers economic decision making. In this respect peasants belong to a context where markets are not fully formed and where self-provisioning is an important aspect of farming. Definitions of family farmers and smallholders, on the other hand, are not constrained by this limitation. We will return to this aspect later in this chapter.

In the chapter, we will in turn discuss the core elements of the definitions of peasant, smallholder and family farming, and their relation to what could be called 'the family mode of production'. Special consideration will be given to their distinct features in Africa and Tanzania. We will to the extent possible avoid the term 'peasant' due to its evolutionary underpinnings and pejorative connotations. However, it is so widespread and commonly used that its complete avoidance is problematic.

Crucial to the understanding of family farming is the motivational basis of individuals' and households' economic behaviour ('are peasants rational?') and the structural and institutional conditions circumscribing their activities. Here, the Chayanovian micro-perspective regarding the operational

logic of the family farm may provide some guidance. Market expansion, population growth and political integration with the surrounding world also stand out as important factors influencing household decision making and the path of rural change more generally.

Agricultural intensification

In the literature, as well as in the following text, terms such as agricultural development, growth and modernisation are frequently used to describe what are essentially processes of agricultural intensification. While agricultural growth in terms of increases in absolute levels of production in principle may occur from expanding the area under cultivation with a given set of technology, agricultural intensification normally refers to production increases that stem from an increase in land productivity (measured in volume or value of output) and/or an increase in the productivity of labour made possible by technological advances (Lele and Stone, 1989).

Intensification may be spurred by population growth in areas where the land frontier has been exhausted, for example through an increase in the frequency of cropping per area (Boserup, 1965). Intensification may also be market driven, however, in which case an external demand for local produce incites farmers to produce a surplus for sale. Rising productivity of land and labour in this situation makes possible an increase in per capita incomes and hence of rural living standards. The historic debates and controversies regarding peasant and agrarian change deal with this latter type of intensification, its conditions and effects on rural households. The emphasis on markets, especially in the classical peasant approaches, however, is often to the neglect of the demographic dimension as a factor in agricultural intensification and agrarian change (see further in this chapter and in Chapter Six).

‘Peasants’ – some core aspects.

The term ‘peasant’ and its collective entity ‘peasantry’ are the most widespread and common labels for family farmers in developing countries. The peasant definition encompasses economic, social/cultural, as well as political

aspects. According to Frank Ellis' (1993, 13) economic definition, peasants are members of rural households that obtain their livelihood *mainly* from agriculture, utilise *mainly* family labour in production, and are *partly* integrated into *incomplete or imperfect* markets implying that a substantial portion of their production is meant for own consumption. To Ellis, peasant farming represents a *transitory* form of a farm organisation that is partly oriented towards markets, partly towards self-provisioning, but which is expected to become fully commercially oriented as markets in the long run develop. What distinguishes 'farmers' from 'peasants' in Ellis' view is the full commitment of the former to commercial farming and their operation in fully formed markets (ibid., 13). Some would argue that these distinctions also make the peasant or family farm similar to that of the business firm. This is, however, a debated argument.

Socially and culturally, peasants often share certain traits that are typical of both historical and contemporary agricultural societies, hence the proposition of a particular 'peasant culture' or a 'peasant society' (Shanin, 1988, 1-14; 1990, 19ff; Wolf, 1966). Included in a peasant culture are institutions and norms regulating, for example, labour division, property inheritance, community solidarity and exclusion. As argued by Shanin (1988, 4), and by Wolf (1966) in his classical book *'Peasants'*, life in a small community is characterised by lack of anonymity and face-to-face relationships, and by community members being tied in multi-dimensional personalised relationships.

Such horizontal networks, with an emphasis on family and kinship, are important sources for the mobilisation and organisation of labour and also constitute an institutional and structural platform for the management and distribution of resources including the generational transfer of land. The family farm is not only a production unit. It is the place also for consumption, welfare, social reproduction, and individual socialisation and identity (Shanin 1988, 4). It is hardly surprising then that land cannot be viewed as a common type of commodity. Although, land may have a distinct price in monetary terms, this is as much based on social concerns as on its production potential.

In Meru, as in sub-Saharan Africa generally, the family farm is encapsulated by a system of predominantly patriarchal authority and a social organisation that to a great extent is structured along lines of age and gender. In

most African agricultural societies, including Meru, women are responsible for subsistence farming and for feeding the family. Men are family heads and act as representatives of their kin and lineage. Economically, they are mainly preoccupied with cash crops, cattle or off-farm activities, including labour migration.

We may here also mention the deeply rooted customary right to land for all. Where land is abundant this is equivalent to the usufruct right, i.e. the right (for women and households) to cultivate land for subsistence. Where land is scarce, as is the case in Meru, customary land rights imply the allocation of a piece of land by the father to each of his sons upon marriage, a situation which over generations produces a cumulative fragmentation of holdings and, eventually, problems of economic viability due to the miniature size of farms. Land fragmentation is propelled by population growth, which is mainly caused by high birth rates. Families and individuals ascribe great value to children because of their economic value and because in the patriarchal and gendered social order repeated childbirths bring status, social recognition and identity to individuals.

According to Hydén (1983; 1990), African societies are typically defined on the basis of corporate groups (e.g. clans, lineages, age sets) rather than on territoriality. The strong adherence by individuals to their lineage and clan extends to a 'moral economy' at the societal level (i.e. what Hydén calls an 'economy of affection'), which serves as a moral reference through which the loyalties and obligations of individuals are defined (Hydén 1983).

Topical in the debate on rural change is the significance of such a collective 'morality' when local customs and institutions are confronted with alternative value systems and face external and internal pressures. It is commonly held that the social cohesion typical of agricultural societies in developing countries tends to weaken as households become integrated economically and socially with the surrounding world.

The 'underdog' position, i.e. the political and economic 'subjugation' of the peasantry.

It is the relation of local cultivators to the surrounding society that defines them as peasants (Wolf 1966, 14ff). By definition, peasants as a category or

'class' are part of a larger dominating political and economic structure, to which they relate from a subordinate position, or as Shanin has formulated it: from an "*underdog*" position (Shanin 1988, 4).

The partial subjugation of the peasantry by outsiders who attempt to control production and extract surplus through taxation, forced labour, control of land, unfavourable terms of trade etc., is throughout the world a noted characteristic of peasant history and societies. Yet, peasants have constantly balanced external demands against their own needs, alternately choosing strategies to increase production or decrease consumption in order to maintain a certain degree of independence and self-determination (Wolf 1966, Netting 1993). At times, peasants' 'resistance' against external domination have taken on more radical forms, such as economic sabotage, boycotts, tax evasion, crop sales in parallel markets, revolts etc. (Scott, 1985).

In Africa, the most important external counterpart to peasants is the state, which in both pre- and post-independence periods has attempted to control markets and through formal legislation influence the path of rural development. State control was more far-reaching in post-independence Tanzania than in most other places in Africa as in the 1970s, the majority of the rural population was resettled into 'Ujamaa' (meaning '*familyhood*') villages in a huge operation that increasingly bore the mark of force and coercion. It was the peasants' ability to evade state control that led Hydén to formulate his thesis on the 'uncaptured' peasantry. According to Hydén (1980), the Tanzanian peasantry withdrew from markets and reverted into subsistence cultivation as the failure of the centrally directed operations became apparent and the country was plunged into a deep economic crisis.

The important point is that in spite of external control measures, peasants and family farmers worldwide retain a certain degree of ownership or control over the means of production and over the managerial aspects of labour and farming. It is hardly surprising then, that the development paths taken by rural societies following their integration into the national and even international economic and political systems have been the topic of much political and academic debate.

The pervasive nature of the peasantry: historical controversies and limitations of perspectives

An informative overview of peasant perspectives and their relation to development thinking and discourses over the last century is presented by Bryceson (2000) in a recent publication by Bryceson et al (2000). Here, we will only give attention to some dimensions of relevance for this study.

One is the major historical debate deriving from the proposition that agricultural modernisation encapsulates an evolutionary process that starts with the 'primitive' cultivator and ends with the full-blown commercial farming enterprise. In this scheme, the 'peasant' is an historical anachronism, somewhere in between the two endpoints but bound by the market forces to ultimately become dissolved and replaced by the capitalist type of farmer. Seen in this way, modernisation of agriculture is an aspect of a more general process that also includes urbanisation and industrialisation and into which rural societies are inevitably drawn by the forces of the market. Modernisation, thus, implies both processes of peasantisation and de-peasantisation.

Within the framework of post-war development theory and the modernisation paradigm, liberal economists and Marxists alike shared such a belief in 'a natural history' towards capitalism (Hettne, 1990, 67), i.e. in the stage-like, progressive and teleological nature of economic development. In this interpretation, modernisation implied the inevitable victory of the rational, mechanised and technologically sophisticated large-scale farm over the manually operated, subsistence oriented and small-scale family farm. Science, technology and scale were attributes of modernisation and they indicated the way forward towards agricultural growth. The overall political significance and encapsulation of this view, informing agricultural policies in many developing countries almost to date, is summarised by Netting:

...it is intriguing that for both the socialists and communists of the left and the free-market capitalists on the right, the agreed-upon path to agricultural development has been the large-scale, mechanized, energy-dependent, scientific, industrialized farm. Smallholders have been universally stigmatized as unproductive... (Netting 1993, 21).

Although these views encapsulated liberals and leftists alike, it was within classical Marxism that agricultural modernisation was given its most contro-

versial theoretical elaboration. According to Lenin, the forces of the market would inevitably set in motion a process of economic polarisation so that the most efficient producers would progress into large-scale capitalist farms employing former peasants as farm labourers, now dispossessed and proletarianised. This was a process essentially similar to that observed in industry as a result of the competition between companies. Attempting to forestall such a proletarianisation of the peasantry, central power holders in different parts of the world ideologically have justified state interventions by reference to this theory, including land redistribution, resettlements, control of markets, and state and collective forms of farming. Ironically, but hardly surprisingly, such measures have often occurred against the will of the peasantry itself. State controlled and collective farming became most far-reaching in practice and ideology in the USSR, Eastern Europe and China.

While in Tanzania, president Nyerere, the founder of African Socialism, was primarily inspired by genuinely African concerns about rural development, he was not unaffected by the Leninist thinking on peasant inequality and the collectivisation of the Chinese peasantry.¹² Also, in Tanzania large state-owned plantations were established, and private farms and companies dealing with trade of crops were nationalised on the presumption that they contributed to enhance rural inequality. Today, large-scale parastatal farms claim nearly 80 per cent of the area under large farms, while private farms account for the remaining 20 per cent. Together these large-scale commercial farms hold about a third of all agricultural land in the country (Havnevik, 1997, 183).

While most African governments in the post-war period launched development strategies that implied various forms of state control over the economy and agricultural sector, it was only in Tanzania and Ethiopia that state intervention meant resettlement of the rural population and collectivisation of production. However, regardless of whether attempts to forestall polarisation of the peasantry by political means were carried through or not, it remains a fact that polarisation has failed to come about to any significant extent, not only in Africa but worldwide. In virtually every country in the

12 See, for example, the passages on polarisation and inequality in the Northern Highlands that Nyerere in his speeches on Socialism took as evidence of emerging class relations following the development of cash crop cultivation in this area (Nyerere, 1968,344,407).

world, the family farm rather than the capitalist farm is the most common type farm (Bolin, 1999; Djurfeldt, 1982; Netting, 1993a).

Some of the reasons for this lack of peasant transformation were given already at the time of Lenin by another Russian, A.V. Chayanov, who argued that peasants are primarily motivated by subjective consumption concerns rather than by profit concerns (Chayanov, 1966). More recent scholars have continued along this line by arguing that the acceptance by peasants of low returns per labour input unit (what Chayanov called 'self exploitation'), the flexibility of consumption levels and the self-provisioning component of production, are among the factors that make peasants competitive with the business type of farm (Netting, 1993a; Shanin, 1988). Equally important is the flexibility of the household labour force in terms of sources of income. Household members may seasonally or temporarily shift into off-farm activities in order to preserve the family farm when market conditions are unfavourable or harvests fail due to drought or other reasons (Lipton, 1968; 1984; Netting, 1993a; Shanin, 1988).

Chayanov argued that modernisation of agriculture was compatible with the continued existence of the family farm, for example, through farmers' marketing cooperatives and organisations and various forms of contracts with agribusiness companies dealing with the refinery of agricultural produce (i.e. vertical integration). Through such institutional arrangements, the family farm has responded to market forces and adapted successfully to industrial societies and the market economy worldwide. A supportive policy framework provided by states concerned with national food-self sufficiency has given further impetus in this direction. These elements have been typical of, for example, West European agriculture in the post-war period and of the Green Revolution in Asia in the 1960s and 1970s (Djurfeldt, 2001). Empirical evidence suggests that the family type of farm, rather than a historical parenthesis, is a durable and viable form of production.

While on the whole, history has proved Chayanov right and Lenin wrong, the questions of agricultural growth and economic polarisation continue to inspire and engage development planners, researchers and politicians nevertheless. This is partly on the basis that, although widespread polarisation and proletarianisation in the Leninist fashion has failed to come about, poverty and inequality in rural areas remain persistent development and humanitarian problems, and particularly so in Africa. Poverty and ine-

quality, however, is not simply a problem of (re)distribution but also one of how to achieve per capita growth in agriculture. In the Asian case, for example, it has been demonstrated that agricultural growth is the most efficient path towards reducing overall rural poverty (Lipton, 1999). This is because agricultural growth, by raising output and incomes among smallholders and the wages for those who are employed in agriculture, affects positively the poorest fraction of the population. What matters here is the 'entitlement' to food. Whether this comes from own production or from increased ability to buy food on the market is of less importance (Lipton, 1999; Sen, 1981). The role of the state and its policies towards the rural and peasant sector is crucial in this respect, and one that is currently debated against the past poor record of state intervention in Africa and the hitherto meagre results of liberalised markets in terms of agricultural performance.

Patterns and directions of change: Peasantisation/de-peasantisation and the de-agrarianisation debate

From what has been said it should be evident that the development path taken by peasant societies does not easily comply with the evolutionist and deterministic perspective represented by the post-war modernisation theorists. Actual developments indicate that local situations are characterised by heterogeneity, diversity and complexity. Depending on local variations in the ecological, socio-cultural, demographic and institutional contexts, and in the degree and kind of influence exercised by the state and other external powers, we may observe several and possibly diverging trends or paths of rural development. This is what Shanin (1988,7-8) calls the multi-causal and multi-directional character of rural change or what Ellis (1993, 13) deems the heterogeneity of social and economic change.

In the 1990s, the peasant debate has taken off in different directions reflecting part of this complexity. One deals with the problem of how to conceptualise the peasantry in the era of post-modernism, globalisation and economic liberalisation and questions the validity of the 'peasant' as an analytical concept (see for example Kearney (1996)). Another direction, and one of more interest to us here, is represented by the ongoing research by Deborah Bryceson and colleagues at the African Study Centre at Leiden

University in the Netherlands. Bryceson claims that a process of 'de-peasantisation' is currently occurring under the compelling forces of structural adjustment, global trade liberalisation and demographic change (Bryceson, 1997; 2000).

Peasantries are shrinking in a relative sense, as a share of the overall population, if not necessarily in absolute numbers given the overall high population growth rate in African countries in particular. They are also shrinking as an organisational form of production. In accordance with Shanin's argument above, Bryceson (2000, 5-6) points out that processes of peasant formation and dissolution deny reduction to a singular development path. However, certain patterns of transformation or directions are stronger and peasants are possibly more likely to become 'capitalized family enterprises' or 'industrial production units' than they are to take on other organisational forms of agricultural production (ibid, Table 1.1, 5).

According to Bryceson, the process of de-peasantisation converges with another process, that of 'de-agrarianisation'. More than ever before, peasants have become multi-occupational, straddling rural and urban residences and going in and out of different occupations. The overall trend is that peasants now more than before have diversified into non-farm sectors of the economy due to the economic, social and political pressures and the opportunities that they are facing (ibid,29-30). We will discuss further aspects of diversification and 'de-agrarianisation' in Chapter Seven, and their inequality and polarisation aspects in Part III.

Demographic factors and rural change

Our final reflection on peasant and rural change concerns the classical peasant interpretation that agrarian change is an essentially market-driven process. Yet, agricultural intensification driven by population growth is historically perhaps the most significant form of agrarian change in Africa and elsewhere. How the two forces, markets and demographic change, integrate in terms of agricultural and economic growth, and how their effects are moderated or catalysed by different ecological, market and institutional conditions is a still largely unresearched field in the African context, into which a documentation of the historical development in Meru hopefully will fill

some knowledge gaps. We will discuss this perspective in more detail in Chapter Six.

Population growth factors also have a bearing on the 'de-agrarianisation' and 'de-peasantisation' side of the rural change, since it can be assumed that mounting population pressure on agricultural land conditions or reinforces changes invoked by markets and state interventions. The question of agricultural intensification is thus linked to the process of rural transformation more generally as outlined above. For example, while it is generally recognised that markets have not dispossessed peasants of their land to any great extent, the question is if population growth in land scarce settings can produce that kind of effect?

We shall finish this chapter by looking at some alternative approaches to the peasant concept. The first one is Netting's smallholder concept, which in a synthesising way integrates market and population factors but without the evolutionist bias that characterised early peasant approaches.

'Smallholders'

Netting (1993,2ff) uses the term 'smallholders' instead of 'peasants' to emphasise the fact that small-scale cultivators exist in both developing and developed parts of the world. What makes smallholders distinct from other rural groups or cultivators is, according to Netting, not their position on some imaginary evolutionary scale ranging from the primitive to the modern, but the small scale of farm operations carried out with household labour. Smallholder farming is not a transitory form of farm organisation, and may thrive regardless of whether the surrounding economic context is approximating some ideal of perfect markets or not.

In addition to what has already been said about peasants, which largely overlaps with the characteristics of smallholders, Netting argues that smallholder farming is a particular form of *land use* defined by man/land ratios that are sufficiently high to compel users into cultivating fields on a permanent basis. The 'ideal typical' smallholder practises intensive, permanent and diversified agriculture on a small farm in a densely populated area (Netting, 1993, 2-3).

For smallholders “...*land is objectively a scarce good, agrarian production per unit area is relatively high and sustainable, fields are permanent, work takes skill and relatively long periods of time, decisions must be made frequently, and the farm family has some continuing rights to the land and its fruits.*” (Netting, 1993, 3).

On intensively cultivated fields, farmers work their land with relatively simple tools but with dedication, managerial skill and long experience, and by way of irrigation, compost manuring and intercropping they reap high yields year after year without exhausting the soil. To Netting, smallholder farming represents a sustainable form of land use. The farmer’s objective is to preserve the land and the farm for generations.

The sustainable smallholder ‘type’ is most clearly exemplified by the ancient wet-rice societies of Asia (Netting, 1993, 9). However, smallholders are well represented also in Europe, Latin America and Africa. In East Africa, the mixed farming and agroforestry systems found primarily in the highland areas provide examples of family-based, small-scale and intensive farming systems that have developed over many years of continuous population growth. Also, cultivators around the Lake Victoria basin and the other great inland lakes, as well along the coast, are family farmers cultivating small farms on an intensive and permanent basis. They largely comply with Netting’s ideal typical definition of smallholders. It would be no exaggeration to state that they also hold the key to the future prosperity and food security of the East Africa region as a whole.

Family farm(er)s, smallholders and peasants – consensus or divergence?

‘The notional family farm’ represents a third type of definition that tries to encapsulate the essence of a kind of farming that is distinct from that of the capitalist enterprise. Djurfeldt (1996, 341), for example, notes that the ‘notional family farm’ is characterised by an overlapping between three functional units; i.e. the unit of production, the unit of consumption, and the unit of kinship (the family). Some add to these characteristics family ownership and managerial control over the means of production as important criteria (see, for example, Bolin, 1999; Errington, 1996,353; and Gasson 1993).

To Djurfeldt, the labour aspect of family farming is central. It is in the role and use of own labour that the family farm is distinct from other forms of agrarian production, e.g. estates or capitalist farms. This is seen most clearly in what is required for the reproduction of the capitalist and family farm, respectively. A capitalist farm must generate a profit in order to remain in business and depends on hired wage labour to this end. For members of the family farm, on the other hand, provision of the 'means of subsistence' is sufficient for reproducing the farm. This is done mainly by the means of family labour (Djurfeldt 1994, 112ff; 1996).¹³

The family farm definition is scale neutral. While in most cases the difference between family farms and capitalist farms implies a difference of scale or farm size, this is by no means absolute. In developed countries many family farmers cultivate large farms due to a far-reaching mechanisation driven by the demand for labour in the industrial sector and a corresponding shortage of labour for farm work. Where mechanisation and consolidation of farmland has not taken place, family farms continue to form small labour intensive units of production, i.e. smallholdings.

In East Africa's high potential areas, the vast majority of family farmers practise mixed farming on small fragmented holdings, much according to Netting's description of typical smallholders (Netting 1993, 3). Smallholders can thus be seen as a sub-category of family farmers, its definition giving relative emphasis to aspects of scale, land use and social factors. In the family farm definition, the most important aspect is that of flexible family labour.

Basically, there are no differences between how labour is organised on family based farms in developing and developed countries, hence both Netting's term '*smallholder*' and Djurfeldt's '*family farm*' are applicable to both contexts. The term '*peasant*', on the other hand, implies a context of incomplete markets and self-provisioning. Discussing Chayanov's model of peasant rationality in the light of 'new home economics', Ellis concludes that

13 What 'subsistence' means is difficult to define objectively. Wolf (1966), for example, uses the terms 'ceremonial surplus' and 'domains' in order to show that a farm household has to produce not only the calories required for the survival of its members but also a surplus for maintaining those relations without which social life would be impossible and for satisfying the demands of external power holders. It is quite clear that 'subsistence' can hardly be defined unless it is linked to the cultural and social context where it is given a meaning and to the preferences and values every individual attaches to it. For a discussion of the 'subsistence' concept, see for example Sharif (1986).

“...what is distinctive about peasant forms of production is not a unique economic rationality common to all of them but rather their partial integration into markets, and the degree of imperfection of those markets...” (Ellis, 1993,142). Where market constraints are removed, the peasant farm can be assumed to operate as a family farm *enterprise* according to the same logic as the business firm (ibid, 13,142).

According to Netting (1993), Djurfeldt (1996), and Shanin (1988; 1990), such requirements are not conditional for the operational logic of the family or smallholder farm since flexible family labour constitutes the most important resource for this kind of farm regardless of context and functioning of markets. This is not to say that the institutional or structural context is irrelevant. It should be evident, for instance, that the market constraints and institutional uncertainty facing producers in Africa have important bearings on farmers’ choices; i.e. whether they give emphasis to self-provisioning, off-farm activities or production for the (parallel) market.

‘The Family Mode of Production’

Lipton (1984) argues along these same lines, however, going further by claiming that family farming is an aspect of a distinct *‘Family Mode of Production’* (FMP).¹⁴ FMP is characterised by family control over the means of production (capital and labour). FMP is not limited to farming but encompasses a large number of so called informal sector activities and occupations, and is competitive versus big capital and formal sector enterprises as long as scale-advantages are not evident and production does not require a capital input beyond the economic reach of families (ibid, 1984).

Typical of the informal sector and FMP is that (i) providers of capital and labour are most often the same persons, (ii) there is a near perfect competition between producers in activities where entry is cheap, and (iii) production occurs outside the legal restrictions regarding employment, wages, working hours, business licences etc. that circumscribe formal sector enterprises and commercial farms (ibid, 1984). The perhaps most obvious exam-

14 Lipton does not discuss the theoretical implications of FMP in terms of its parallel existence with the dominating capitalist mode of production. For a critique, see for example Ellis (1993,119-20)

ple of FMP is family farming, but also other artisanal, trade oriented and commodity producing enterprises, organised locally, on a small scale, with limited capital, and on a family labour basis, are able to thrive and accumulate wealth in competition with formal sector enterprises.

The key issue is what Lipton (1984) calls the 'fungibility' of the FMP. Fungibility refers to the flexibility of capital and labour of the family farm or enterprise. There is a near full possibility of exchange and substitution among different production and consumption alternatives, between the tasks carried out by different household members at different times of the year, over the life cycle etc. This flexibility of labour and capital and of production and consumption, the option of self provisioning if markets fail, and the range of income opportunities that household members are able to synchronise with farm work in order to maximise household utility and wellbeing; all these factors render the family farm or the family enterprise an advantage over the capitalist farm or business firm.

The viability of family farms

The advantage of family farming or FMP is not limited to a developing country context. Although the capital input in farming in developed countries has grown substantially over the last decades and production in some cases has taken on industrial forms with a highly specialised and large-scale production, the majority of production units remain family based. As discussed by Bolin (1999) and Svensson (2000) with reference to the Swedish situation, the increase of fixed capital in the form of land, machinery, buildings etc. has made it possible to cultivate more intensively or plough a larger area per labour unit. However, when the cost of capital has tended to exceed the financial ability of individual households, farmers have opted to share machinery or rent such services from outside. But they have rarely taken the step of expanding production and farm size beyond the scope of what can be managed by family labour.

The obvious reason is the dramatically increased transaction costs associated with employed labour as the farm ceases to exist as a family run enterprise (Bolin, 1999; Svensson, 2000). Consequently, for similar reasons as in developing countries, the FMP represents an advantageous form of produc-

tion, also in the European context. The internal logic of the family farm, however, remains unaffected by the formal development status of input and output markets.

The high transaction costs associated with wage labour farming have given rise to an intriguing debate about a possible inverse relationship between production per ha and farm size. The often assumed scale advantage, specialisation and higher productivity of the large-scale, commercially run farm enterprise is questioned here. The debate has a number of political and theoretical implications and we will return to some of them later.

Given the social and cultural character and context of family farming, it is unlikely that all economic transactions will become fully encompassed by market relations. For example, when labour is allocated according to social norms about what are acceptable tasks for men and women rather than on the basis of pure economic efficiency concerns, this may represent a trade-off in terms of potential production. Apart from family labour, land is another production factor that has never been fully commoditised anywhere in the world. In spite of arguments by some economists to the contrary, in reality the free land market is nowhere to be found. In developed countries land purchases are regulated in order to preserve certain social or cultural values linked to rural life or to prevent speculation by profit seekers. In developing countries cultivation rights may be vested in customary tenure or in tenancy arrangements that regulate transactions and exclude outsiders from access to land.

Nowhere in the world is family farming de-linked from its social context. It is true that informal institutions in some respects are more prominent in developing countries. However, informal social networks and social concerns do play a large role for labour mobilisation and resource exchange also among family farmers in developed countries such as Sweden. What authorities commonly see as 'tax evasion' or refer to in terms of the 'grey' or 'black sector', informal transactions within and between networks made up by neighbours, relatives and community members, are crucial parts of rural life. And perhaps most important of all: the flexibility of family labour and the motivation that lies in the satisfaction of working for one's own farm and family is independent of whether the land is cultivated with hoe or tractor or whether markets approximate some ideal situation or not.

Off-farm incomes

How does the smallholder or family type of farm household comply with the widespread off-farm pursuits of individual household members? According to Shanin (1988,5ff) and Ellis (1993,13ff), the ideal typical or 'hard-core' peasants derive their living *mainly* from agriculture. External income generation in the form of complementary activities is therefore compatible with the peasant and smallholder definition. However, an increasing number of rural households in Africa, and in Meru, for various reasons now appear to live mainly from off-farm incomes with farming being a complementary or marginal activity. And some households pursue such activities in order to be able to employ for central farm functions agricultural labourers, hence violating another condition of peasant farming; i.e. that of using *mainly* family labour for farm operations.

Shanin considers such rural households to be 'marginal peasants', sharing some but not all of the central peasant or smallholder traits. At a certain point, the marginality of farming for such households may distance them from the peasant concept altogether and make them resemble other 'ideal typical' rural groups, such as agricultural labourers, artisans, businessmen, capitalist farmers etc. (Shanin, 1988; 1990). The growing significance of off-farm incomes or economic diversification in the livelihoods of smallholder families in Africa implies a relative increase of 'marginal peasants' in rural areas and the rise of rural groups engaged in occupations other than farming (see also earlier section on de-agrarianisation).

Are family farmers rational?

It deserves to be emphasised that the motivational aspects of households' and individuals' economic decision making and whether or not they respond to market incentives by increasing production are of central concern to studies of agrarian change and bear on a large number of rural development and policy aspects.

In today's Africa, the notion of the market and price responsive peasants has a strong appeal to donors and policy makers, this notion being a cornerstone of the liberal market ideology. And in support of this view, it has been

demonstrated in a number of studies that smallholders under certain conditions do respond positively to price and market incentives and that they show clear elements of rational calculation vis-à-vis economic goals (Ellis 1993:74-76; Netting 1993,27).

The idea of the rational and market responsive peasant is not new, however. In the 1960s, Schultz saw peasants as rational economisers who by virtue of long experience and familiarity with their environment allocated production resources efficiently. They were, however, constrained by the limitations of their available technology, or as Schultz concluded: they were “*efficient but poor*” (Schultz 1964:38).

From the notion of ‘technological constraints’, the discourse on peasant rationality has developed in polemic with the neo-classical view of the profit maximising individual producer (for an overview, see Ellis, 1993). A major strand within the ‘rational peasant’ paradigm concluded that peasants were rational, but that rationality must be seen in relation to the uncertainties and risks facing producers regarding for example the climate and markets. Also in this vein it was argued that income diversification was a rational instrument for dealing with risks and uncertainties (see, for example, Adams (1986), Ellis (1993), and Lipton (1968)).

Another perspective argues that cultural factors – rules, customs, values, habits – affect the economic behaviour of smallholders (Adams, 1986). Behaviour is not solely the result of conscious and calculated effort, regardless of whether we see it as risk aversion or as maximisation of personal gains. Economic behaviour also has a social dimension attached to it which may or may not be consciously reflected or articulated, but which nevertheless tends to make some forms of action comply with the prescriptions of local customs and institutions. Much of the debate on peasant rationality has focussed on the relative importance of optimisation of individual material gains as the motivational force on the one hand, and on the other, the influence of cultural factors, institutions and values (see for example the debate between Popkin (1979) and Scott (1976)).¹⁵

More recently, an influential institutional perspective has been that of the New Institutional Economics (NIE). Here, the argument is that producers are partly guided in their behaviour by institutional arrangements that may

15 This debate is sometimes referred to as a debate between formalists (individualism, rationality) and subjectivists (collectivism, cultural values) (Adams, 1986).

promote or impede economic improvements. The point made by NIE is that transaction costs have to be included in economic models so as to give a full understanding of whether production resources are efficiently allocated or not. Thus, institutions that minimise transaction costs, reduce uncertainty and offer economic incentives to producers are crucial to overall economic performance (Bardhan, 1989; Martinussen, 1993; North, 1990; Toye, 1993). This approach has gained substantial influence on programs of economic liberalisation in Africa, a crucial component of which is institutional reforms, notably regarding the functioning of markets and the tenure and management aspects of resources such as land and water.

Some concluding notes

It is time to give a few concluding comments on this chapter and on the rationale according to which family farmers behave. What we receive from Chayanov is the proposition that the motivational force of households' allocation of labour is consumption demand. Consumption needs are subjectively defined according to individual preferences and the prevailing social and cultural values of the society. In a similar way, the allocation of labour will reflect not only pure efficiency concerns with due consideration taken to the uncertainty and long term security of production, but also the norms and social values related to certain occupations and social positions. Similarly, the emotional or social attachment to the land and the family felt by individual household members will affect the allocation of labour.

In spite of peasants' partial independence, state policies in the rural and agricultural sector, and market access more generally, have an impact on the choices made by households and household members. Also changes in internal production factors affect households' decision making. Where land has become scarce due to population growth, livelihoods have changed in order for households to survive and benefit. Off-farm activities, farm intensification and farm expansion are common responses to such a situation, as can be seen for example in the case of the Meru.

Within their overall economic and political context, smallholders are concerned with the wellbeing of their families and ultimately with the survival and reproduction of their family farm. In order to meet these needs

and conditions, farmers are inclined to rational calculation. And they may respond positively to market incentives when this can improve their overall wellbeing. But they are not constrained to seek profits in the way business firms must do. In the Chayanovian perspective this means that smallholders may continue farming as long as the marginal utility of additional work exceeds their subjectively perceived marginal disutility or drudgery of such work. This may occasionally imply a return to labour far below the profit margin needed by business farms. But in family farming low returns can be endured since the cost of own work is not calculated according to the market price for hired labour, but is valued according to the subjective utility of the final output. In addition, the flexibility of family labour makes it possible for the farm household to draw on off-farm incomes in order to preserve the farm during times when the market is unfavourable for the exchange of agricultural produce.

Many would argue against Netting's and others' optimistic and possibly romantic picture of the blessings of smallholder farming that has been introduced in this chapter. To be sure, there is much in support of the view that smallholder farming in Tanzania and elsewhere in Africa is facing a crisis and that it is crumbling under the economic pressures of structural adjustment and rapid population growth, forces to which it is seemingly unable to adapt to in a sustainable manner. The 'de-agrarianisation' and 'de-peasantisation' processes, for example, may be telling evidence that local family farms in the present situation are unable to support their own members. And the frequent reports of degraded farmlands, overcultivation and excessive fragmentation of holdings in some of Africa's best agricultural areas run counter to Netting's claim that smallholder farming is a sustainable form of land use.

In this thesis, we will not be able to give a full answer to all aspects of smallholder or family farming raised in this chapter. However, the Meru historical situation may shed light on some of the issues brought up here as the family farmers there try to adapt to internal and external conditions, some of which agreeably are interpreted in terms of crisis. At the very focus of forces of compulsion and opportunity is the family farm household, its members and their labour capacity, their dreams and perceptions, their struggle for land and a better life, and their ability to survive and prosper in a constantly changing social and economic environment.

Field Research Methods

Introduction

It is not uncommon that original research questions are modified in light of new information that surfaces in the course of fieldwork. The original purpose of this study was to examine how changes in human reproduction could be understood from the point of view of land shortage and agricultural intensification. To that end an extensive statistical data material was collected on demographic indicators and vital statistics.

As things developed, we were caught up by what appeared to be a radical and seemingly new change in the livelihoods and income orientation of Meru households. What we saw was the growing involvement by household members in activities outside the farm, a phenomenon that was tentatively explained by the severe shortage of land, as well as by the structural constraints and opportunities that were brought by market liberalisation and structural adjustment.

This reorientation of research issues does not render invalid the relevance of (studying) demographic change in relation to the structural constraints and economic opportunities that are present in the area. On the contrary, such a task would link up well with the present focus and could also depart from a similar set of empirical observations. The exclusion of coverage of human reproduction in this book is therefore made out of practical reasons. Some of the findings connecting to the demographic data material have been presented in working and conference papers during the latter half of the 1990s (see Larsson, 1997; 1999, and Egerö and Larsson, 1999).

Approaching the field

Mt Meru area was selected on the basis of its long history of population growth and agricultural change, yet seemingly without the adverse effects in the form of widespread poverty and land degradation that many development workers in the 1980s commonly associated with rapid population growth in Africa. Another reason for selecting Mount Meru as a study area was that the Meru have remained dominant within their 'tribal' area. Natural population growth rather than immigration has been the main cause of mounting population pressure. This means that institutional and social change in Meru have taken place within a relatively homogenous cultural framework, unaffected by the mixture of social and cultural systems typical of land frontier areas. All in all, Mount Meru and the Meru seemed to be a reasonable choice for a study on rural responses to population pressure and market demand. The preliminary decision to include Meru as a study area and the first contacts in this direction were taken during a short reconnaissance trip to Northern Tanzania in early 1994.

Securing funding for the research project, fieldwork was initiated in October 1994 with a three week intensive language course in Kiswahili at Usa River at the foot of the mountain, later followed by a number of private language lessons. In retrospect, this proved a well spent effort, since having a rudimentary command of the local language was an invaluable tool for approaching people and gaining their confidence. Although the indigenous tongue of the Meru is Kimeru (i.e. *Ki-Rwa*), Kiswahili is commonly used and understood by everybody. A few greeting phrases in Kimeru were added to the Kiswahili vocabulary. After initiating fieldwork, six additional field trips were carried out in the course of the research, each lasting between three weeks and three months. The final trip was completed in November 1998.

During the first field trip, we travelled extensively throughout Meruland acquainting ourselves with the land and the people. During three weeks, we visited every village on the mountain (25 in total) and interviewed the village leaders according to a checklist aimed to bring out village characteristics on land availability, market integration, crops, socio-economic development and history (Map 1.3, Chapter One). The decision to select Mount Meru as a study area seemed to be well founded. In all villages, land shortage

was reported as the most pressing problem facing households and village leaders.

Generally, the villages located closer to the main road (West Meru) seemed to display a higher level of social and economic development than villages near the forest boundary high up on the mountain. For example, near the road, brick and cement houses were more frequent, electric power and telephone lines were present, the road infrastructure was better etc. These differences partly stem from the proximity to markets and Arusha town and the contacts that people in this area developed with Europeans at an early stage. It was in West Meru that Christianity and coffee cultivation took root during early colonial times, and where the first schools and missionary outstations were built. Today, it is generally held that Meru traditions and customs are more strongly advocated in the upper mountain villages, whereas in West Meru people care less about 'traditional' values (see for example Haram (1999, 36), and Puritt (1970)).

The extent and implications of such differences are not entirely clear, however. The physical distance from the main road to the uppermost villages hardly exceeds five kilometres, in view of which the importance of observed differences may seem somewhat exaggerated. At the same time, road conditions are such that actual distance is a poor indicator of accessibility. During heavy rains it is difficult to reach the upper mountain villages even with a four-wheel drive vehicle.

Singisi village

A partial purpose of the Meru roundtrip was to select one village for an in-depth study. Having ruled out some villages on the basis of being partly townships or lying outside the coffee-banana belt, we were left with a small number of candidates, most of them in West Meru area. Following additional interviews with traditional leaders at one of their Mringaringa meetings at Poli, we eventually singled out Singisi village as the most suitable village for an in-depth study of the research issues outlined. There was broad agreement among leaders that Singisi is facing the most severe land shortage of all villages in Meru.¹⁶ In fact, the average per household availability of land in this village is 0.3 ha or less. Also, the location of this village along

the main Arusha-Moshi road and near Tengeru Township makes it likely to be more exposed to external influences than many other villages in Meru. For example, Arusha is only a 15 minutes ride away on a minibus. Among Meru in general, since the time of independence, Singisi has earned a reputation as a 'modern' village where 'people dress and behave like in town'.

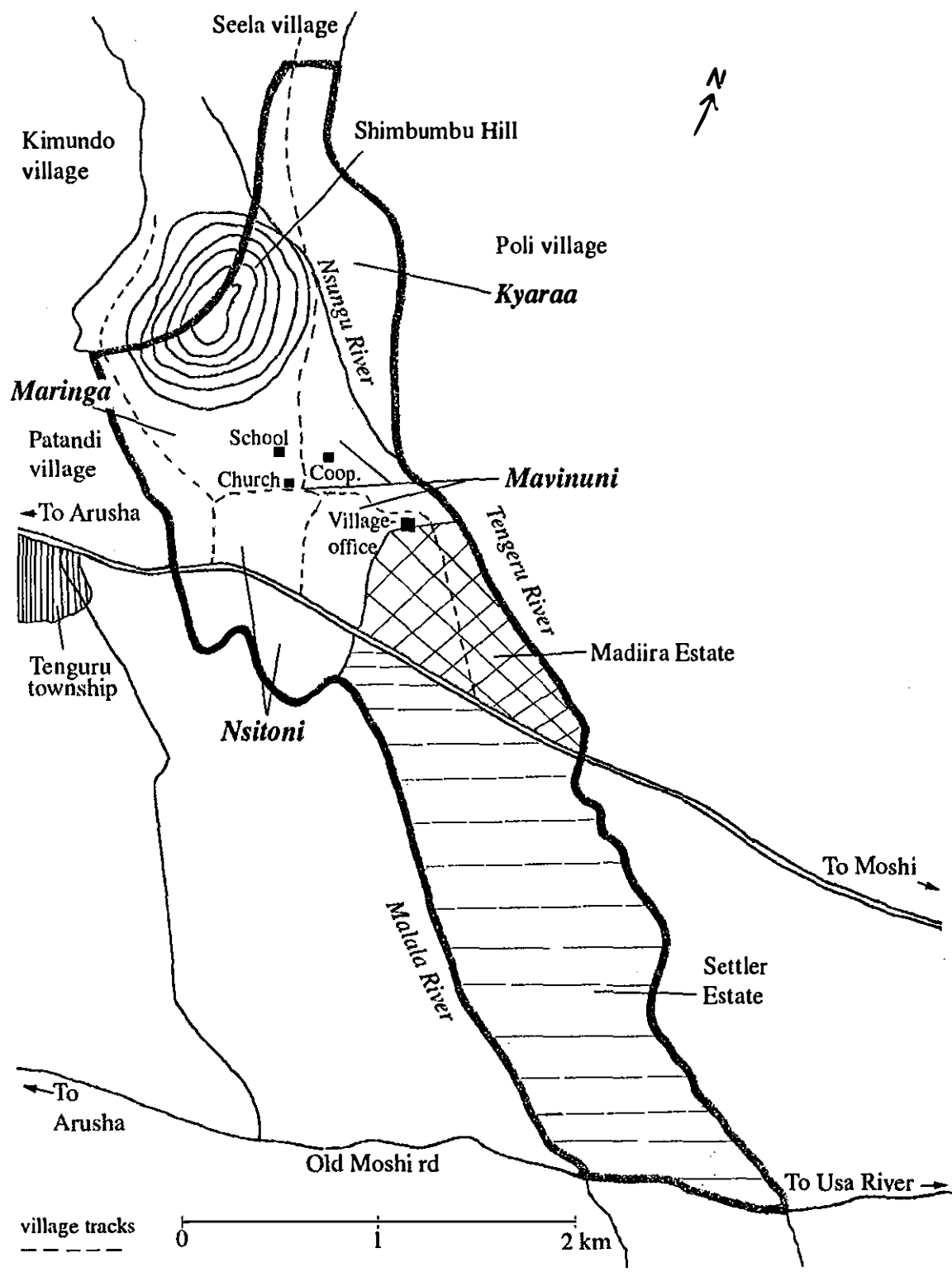
Covering about 5.4 km², Singisi is located between the Tengeru and Malala rivers (Map 3.1). Nearly half of the village is estate land, which although formally under the village government, in practise is separated from the smallholder community residing in the northern part of the village, an area of about 3 km² (Map 3.1, for an additional background on Singisi settlement, see Chapter Four). Singisi is divided into four subvillages: Kyaraa, Mavinuni, Maringa and Nsitoni.

Singisi lies entirely within the coffee-banana belt along its southeastern fringe. Irrigated cultivation of coffee, bananas and vegetables, plus dairy farming constitute the main agricultural activities. A striking feature is the daily exodus of people from the village, which appear almost deserted until early afternoon hours. A long tail of men and women leave their homes every morning, heading for Tengeru or Arusha Town for business or employment purposes, or to the lowlands to cultivate or collect grass for the cows at home.

During the following two field trips, we extended our knowledge of Singisi, of its history, the land and the people, and how they organised their subsistence and income earning activities. During this time, we used a number of qualitative data collection methods, including observations, key informant interviews¹⁷ and semi-structured interviews. We also used a variety of 'participatory' and 'rapid appraisal' techniques, such as transect walks, map drawing, group interviews and wealth rankings.

16 Later it was revealed that this was only partly a true statement given that nearly four out of five households in Singisi have access to additional holdings on the plains.

17 Key informants refer to people assumed to have a good knowledge on matters researched. They include school teachers, village leaders, government workers and other professionals, or ordinary villagers with a broad knowledge.



Map 3.1: Singisi village*
 *Compiled from air photographs (sheet GS 1-10, 1972; Bureau of Survey and Mapping, Dar es Salaam), village interviews and transect walks.

Qualitative and quantitative research methods

Although both quantitative and qualitative research methods have been used in this study, in the presentation there is an apparent emphasis on data gathered with the former method, as the reader will discover. The debate on the pros and cons of these respective methods is well known and the positions in the debate will not be repeated here, save for comments that spring from the experiences gained from this particular fieldwork. Also, for reasons of space, we will limit the content of this chapter to the two fieldwork methods that most clearly stand out in the empirical presentation and analysis: the sample survey and the wealth ranking technique.

According to Chambers (1983; 1989; 1993), surveys concentrate on what is answerable, acceptable and measurable, producing shallow, artificial and often biased information of questionable value and quality, presented after a long time and at high cost. Much of this critique is well founded and deterring examples abound. In the same vein, Chambers is critical of the time consuming anthropological approach in the form of participant observation and extensive in-depth interviewing that drags on for months and even years. According to Chambers, both methods are of limited use and value for development practitioners with their target-oriented kind of research, strict project budgets and limited time, circumstances that have made him and others argue in favour of more participatory and 'relaxed' techniques (i.e. Participatory Rural Appraisal (PRA) and Rapid/Relaxed Rural Appraisal (RRA)).

This does not rule out, however, the use and value of conventional research methods when time *is* available and when such methods are justified on the basis of the research issues (for a discussion, see for example Athreya et al, 1990, 40ff). For example, the demographic data that we collected by survey interviewing would be quite impossible to obtain by any other alternative method. In the same way, one may recognise the value of, for example, the PRA wealth ranking technique as a quick and approximate method of assessing inequality in a local setting. By being local and subjective, however, it has limited value in terms of generalisation outside its local context. Wealth ranking may provide a rough classification of villagers with respect to the distribution of important production resources, but only a sufficiently large and representative sample of respondents can answer questions re-

lated to the absolute amount and range of resources that characterise such rural strata.

Still, we used these kinds of participatory techniques extensively in our fieldwork, especially during the initial phases when we arrived at new villages. We acknowledge their great value for yielding quick snapshots of the situation and for generating valid questions to be followed by in-depth interviews or formal surveys. In this light, a discussion that aims at excluding one method for the other is both unfruitful and pointless. All methods are able to generate valuable data and any method can be useless when applied for the wrong purpose or without proper care and preparation. Each method has strengths and weaknesses. It is by combining them during fieldwork that both the validity and reliability of data can be improved.

Constructing household lists

Our initial interviews with village leaders and other key informants in Singisi generated an approximate picture of the village organisation and its physical and social characteristics. This was complemented by several transect walks across the village and map drawing of its different features, an exercise that generated further questioning and information. Following these, we carried out a counting of households in the village. The reasons for this exercise were several. We wanted to know the household population size of the village, what types of households were represented and we also needed a valid sampling frame from which to draw a sample for the subsequent survey.

Planning this operation led to some immediate conceptual and practical problems. What constitutes a household? We used a conventional definition that also has been applied in the National Censuses, namely that a household consists of people sleeping under the same roof and sharing the same food. Still, this seemingly straightforward definition was not unproblematic. It is, for example, common in Meru that male youths approaching their twenties build their own house on their parents' land and earn an independent income while still eating with their parents and working their land. The partial independence of these young males at times provided difficult border cases. We eventually decided to treat these youths as members

of their parents' household. We used marriage as a criterion for household (and family) formation, which also was in line with the view of the Meru.

Another border case concerned polygamous households. According to Meru tradition, men and women sleep in different houses. While this tradition for various reasons has been eroded with the majority of spouses living in monogamous relationships and in the same house, this was not the case with polygamous households. The wives and the husband in polygamous households often live within the same compound, however. In polygamous settings there is an inevitable overlapping of basic household and agricultural tasks, not least because the operation of the coffee fields is the husband's responsibility for which he may call on his wives for labour. Having said that, it was also obvious that this kind of economic overlapping was far from complete. We found that the situation varied from clan to clan and from village to village. Generally, each wife had her own fields for subsistence crops but she was to a varying degree often able to draw on coffee, milk or off-farm incomes in order to provide for herself and her children, hence reducing what used to be a firm male supremacy over cash income sources. We decided to treat the people and the house in which the husband was living with one of his wives (in most cases the youngest one) as one household unit, and as separate household units those that were formed by the other wives and their children. This was a compromise but one that appeared to be more in line with the real situation than the alternative of treating the whole polygamous compound as one social and economic unit.

A note should be given regarding the problems arising from the household definition applied to 'lodge' dwellers who are quite common in Singisi. Given the proximity to Arusha and Tengeru, a number of Singisi farmers gain incomes from renting accommodation in 'lodges' to landless or migrant workers. This situation posed some obvious problems. Sometimes such workers shared a room on a more or less temporary basis, although they in other respects were economically independent of one another. In this case, we treated as the household head the eldest dweller and as household members all other room residents.

This brings us to the commonly raised question of whether the household as such is a relevant unit of study in an African context. The gendered division of labour in African societies, for example, in which men and women take on different economic responsibilities and hold different loyalties

and obligations towards their own kin, is well described in the literature. A similar labour division is found for age, according to which young men and women are expected to contribute farm labour and transfer incomes to their parents.

While, the traditionally gendered division is partly being eroded in Meru with (some) men taking on women's tasks, and women coming into men's domain, indicating a trend towards more equal spousal relations and an improved situation generally for women, it needs to be stressed that gender divisions are still profound in most social and economic aspects of domestic and public life, as evidenced by the still strong hold of patriarchal values and the patrilinear form of land tenure. Again, the use of the household as a study unit is a compromise that was partly justified out of practical considerations and partly out of recognition that sufficient pooling of individuals' resources is taking place in order for the household to serve as a meaningful unit of analysis.

Similarly, parents' hold over their half-grown children has been eroded with increasing opportunities for youths to earn an independent income, which in the case of males partly fills the purpose of wealth accumulation for marriage. However, also in this case there is at least some pooling of resources, a circumstance that makes it reasonable to argue that the household can be used as a unit of analysis. We have to the extent possible complemented this decision by collecting information on gender and age aspects through alternative methods and including this in the analysis and presentation where appropriate. In the survey, data were collected about individual household members through interviews with the household head. The most important source of information regarding intra-household relationships, however, came from qualitative methods, e.g. in-depth interviews and observations of village and household life.

Thus having arrived at what seemed to be a manageable definition of the household, the listing or census itself was a straightforward operation. Four enumerators from the village covered one subvillage each and collected most of the census information from ten-cell leaders (*mabalozi*)¹⁸ or from clan

18 The ten-cell leaders functioned as grass-root party representatives during the era of African Socialism, assuming responsibility for labour mobilisation, information dissemination etc. Today, most of their prior functions have disappeared, although they still have a good knowledge of people residing under their 'authority'.

elders. For lodge dwellers, the owners of the lodges were consulted. The enumerators covered all households within the village borders. However, we excluded the estate part of the village in which some 50 – 100 workers and two settler families were residing. The result is given in Table 3.1.

Table 3.1: *Singisi households according to marriage status*¹⁹

Singisi village	Total	Male headed hh		Female headed hh			Never married	Female headed in polyg. units
		<i>Total male headed</i>	Male headed in polyg. units	<i>Total female headed</i>	Wid-ows	Divorced		
Total	959	780	24	179	117	19	17	26
Per cent of total	100	81.3	2.5	18.7	12.2	2.0	1.8	2.7

Sampling and survey preparation

On the basis of the subvillage household lists we drew from each subvillage a random sample of households by systematic selection of every third household. The systematic sampling method produced a geographically more representative sample than might have been the result of using a simple random sample (SRS) drawn from a village list. For statistical procedures, systematic sampling in this case is equivalent to SRS. In this way, we obtained a sample consisting of 323 households in Singisi village.

We had the intention of using wealth rankings for stratifying the subvillage household populations into wealth groups, hence improving the representation of wealth indicators in the sample. However, wealth rankings require a manageable number of households (or persons) in a local context where informants know all households (persons). As a rule, it should not exceed 100-150 units (Grandin, 1988). In this case, subvillage household populations reached 300 households or more and conventional rankings proved to be a cumbersome method. Instead, we used wealth rankings for classifying the already drawn sample into wealth groups. Used in this way, rankings served to crosscheck sample survey indicators on wealth, and above all, as a valuable inroad for discussions on relations between different eco-

19 Detailed marital status was in the counting only recorded for female heads of household.

conomic strata in the village. It was out of these exercises that we later on developed and modified the wealth ranking technique into a tool for assessing intergenerational social mobility. These aspects are discussed at the end of this Chapter.

The subvillage wealth grouping was also used for drawing a sub-sample of about 15 households for deep interviews and life history documentation. These households represented poor as well as wealthy strata, young and old as well as male and female-headed households. For at least ten of these households, we established long-lasting relations and kept on visiting them during several fieldwork periods until November 1998.

Enumerators and the pilot survey

Realising that the usefulness of information collected through formal surveys to a great extent hinges on factors other than sampling errors, we took every reasonable step to assure a high data quality in terms of the validity and reliability of questions. It was, for example, on the basis of the results of the key informant interviews, the wealth rankings and the household case studies that we developed and formulated the questions to be used in the survey. A preliminary version of a survey questionnaire was completed in September 1995, six months after our work had begun in Singisi.

A not uncommon problem in surveys are errors that derive from interviewer bias, a problem that tends to be linked to the (lack of) skill and motivation of enumerators and one that often increases with the number of enumerators employed. We decided to try to minimise this source of error by proceeding slowly and relying mainly on two enumerators who were carefully trained and introduced to interview work. This also facilitated monitoring the survey. Whatever problems arose during the interviews could be dealt with and corrected within a short time.

One of the enumerators was the regular research assistant, a man who was well acquainted with this kind of tasks from prior experience. Also the other enumerator was a man, born in the village and a member of the village government.²⁰ Both enumerators were in their forties, i.e. old enough to gain the confidence of the elderly respondents in particular. We had some initial worries of using a local government representative as enumerator in the sur-

vey. These worries proved unfounded and the knowledge this man held of people in the village was a great asset in the research.

The questionnaire was finally tested on a small number of respondents (about 20) in order to familiarise the enumerators with the situation and to solve unforeseen problems. The pilot survey resulted in a general shortening of the questionnaire. A number of questions were omitted while others were reformulated. We thereafter translated the questionnaire into Kiswahili and back to English again, an exercise that straightened out the last uncertainties regarding enumerators understanding of some of the questions. We were then ready to take on the full-scale survey. The questionnaire is reproduced in Appendix I.²¹

Matters of reliability and the cross-checking of information

Most questions in the survey were relatively straightforward, asking about 'how many', 'how much', 'when' and 'what' and so on, or simply requiring a yes/no answer from the respondent. With a few exceptions, we avoided quantification of assets, knowing beforehand that such answers for several reasons often would be biased. We asked about land size, number of cows etc. on the basis of their centrality to the research issues and since this information quite easily could be cross-checked from independent sources, at least as long as they were of a local kind. We asked about income sources rather than the level of incomes, realising that answers to the latter would be biased as many respondents would be unable to provide realistic answers on the spot even if they wanted to. In retrospect, this proved perhaps a less wise decision, however, since data on income level, even in a rudimentary form, could have been useful.

20 The enumerators were Jehova Roy Kaaya and Jonathan Iyawe Kyungai. Samwel Kaaya, an agricultural extension officer from a nearby village did a smaller number of interviews. A similar approach was used for the collection of demographic data, which required interviews of women in the sampled households. Also, for these interviews we used only two enumerators, who with great skill and dedication completed a large number of interviews. They were Ms Kamite Kitomari, a schoolteacher from Singisi and Ms Evelyn Ruzindaza, a ward agricultural extension officer from Nkoanrua village.

21 A questionnaire was developed for obtaining information about childbearing and family planning from women in the sampled households. For reasons of space and because these issues are not covered here, this questionnaire has been omitted from the Appendix.

We cross-checked survey respondents' answers on household assets (land size, number of cows, means of transport etc.) collecting this information from three independent and local informants. There was generally a good agreement between statements of the respondents and the informants regarding the *kind* of assets controlled by the former. Where they differed was mainly on the size or amount of assets (e.g. farm size, size of cattle herd etc.). In this, there was as much disagreement, however, between the informants themselves as between the informants and the respondent. We also tried to make a rough surface estimation of the resident plot by walking around the farm perimeters, counting the number of steps and drawing simple maps. Here, we found that the measured farm size more often than not was *smaller* than the size given by the farmers during the interview.

It is our conclusion that statements about mountain farm size are imprecise, mainly because the respondents themselves lack the correct information. Their statements are sufficiently accurate, however, for purposes of ranking respondents and for yielding reliable results from most statistical analysis. The individual resource tenure on the mountain, coupled with the local knowledge of the enumerators and the constant cross-checking of the information given in the interviews, served to secure a reasonable quality of the data throughout the survey. After every day in the field, the questionnaires were checked for inconsistencies and 'unrealistic' answers. Occasionally, a revisit to the households interviewed was required.

We consider statements about number of graded dairy cows on the mountain to be accurate given the individual ownership of these assets. By contrast, responses regarding the size of the cattle herd and land holdings on the plains are much more uncertain, partly because of the often complex arrangements for 'owning' and using these assets through kin networks and patronage relations. For many of the wealthy farmers, the information given in the survey on farm size represents a gross underestimation. When the information was cross-checked, we found that these farmers on the plains often controlled or had access to land several times the size they stated in the survey.

A limited number of questions required careful probing by the enumerator. These were questions of a retrospective kind, for example, what changes in crops or land use that had occurred on the farm since the respondent inherited the land. Other retrospective questions aimed at tracing how re-

spondents perceived long term trends in crop yields etc. These questions yielded answers with a higher incidence of 'errors' than did the more straightforward questions. These were also the kind of questions for which we after completion of the survey discovered enumerator-bias based on a different interpretation of answers and possibly different phrasing of questions by the two enumerators.

This illustrates a common limitation of surveys, i.e. that simplification, efficiency and ability to generalise often occurs at the expense of depth and complexity and clarification of the conditional factors that lie behind farmers' statements and perceptions. If this is a price too high to pay is not easy to answer generally. Obviously, some questions more than others are unsuitable for survey interviews. Questions of a sensitive nature or which require careful probing, for example, are probably better dealt with by alternative methods or at least need to be complemented by other methods.

Expanding the survey

In the course of planning the survey in Singisi, we realised that expanding the survey to a larger number of Meru villages would substantially increase the value and generalisation of the findings. Knowing that usable or reliable household registers from which to draw an expanded sample were non-existent, the problem was, how do we obtain a sample of reasonable size, at reasonable cost, with a reasonable geographical distribution and with as small a sampling error as possible?

We decided to apply a two stage sampling design involving in the first stage a sampling of subvillages, and in the second stage a sampling of households from the former. We preferred to use subvillages rather than villages in the first stage due to that the size of the former was manageable given practical (logistic) considerations and the need to cross-check survey findings.

We first compiled a list of Meru villages and subvillages in the study area as given on Map 1.3 (in Chapter One). Thereafter we stratified the sampling frame by dividing Meru into northern subvillages (located high on the mountain) and southern subvillages (located near the main road). The reason for this stratification was twofold, i.e. to secure sufficient geographical

representation of Meru households and to simplify comparisons between the two areas, which according to our preliminary inquiry displayed differences in developmental indicators, as stated earlier.

From each of the sampling frames we took out four subvillages using a modified version of the method known as Proportional Probability Sampling (PPS) (Fowler, 1984, 28-9; Kalton, 1983, 38ff). Since this design gives all households an equal probability of being included in the sample, it produces self-weighting and unbiased estimates of population indicators. The modification we did to this sampling design was required on the basis that subvillage household populations were not known but had to be estimated. We did these estimations from the records of village populations obtained in the 1988 National Census and interviews with village leaders. A detailed presentation of the sampling process is given in Appendix III.

This sampling design was somewhat more complex than the more straightforward method of first sampling subvillages with SRS and thereafter adjusting the household sample size according to the size of the subvillages. A number of reasons made us prefer the PPS method. It can be shown that PPS produces a result with a smaller sampling error than any other multi-stage sampling design, even when applied on imprecise estimations of primary sampling units as is the case here (see for example Cochran, 1977; and Appendix III).

Having concluded the first sampling stage, the remaining steps were relatively straightforward. After introduction in the sampled subvillages/villages, household censuses were conducted in each of them and from the household lists thus produced, household samples were drawn through systematic sampling. These households were then added to the ones previously drawn in Singisi. The subvillages and household samples are given in Table 3.2 (for geographical location, see Map 1.3).

Table 3.2: *Surveyed subvillages, household population and sample size, non-response and final number of households interviewed. Village names within brackets (S=south, N=north).*

Subvillage (village)	Household population size	Sample size	Non-response	Final sample (interviewed)
Mavinuni (Singisi)/S	263	87	5	82
Maringa (Singisi)/S	179	62	7	55
Nsitoni (Singisi)/S	305	101	6	95
Kyaraa (Singisi)/S	212	71	3	68
Nkoambiaa/S (Nkoanrua)	98	59	2	57
Njoro (Poli)/S	189	63	5	58
Kirima (Nshupu)/S	134	60	3	57
Mura wa Iwen (Nguruma)/S	157	53	3	50
Ndoombo Kati (Ndoombo Ngwaresambu)/N	160	62	3	59
Kyuta (Mulala)/N	62	62	0	62
Nkoanekoli (Nkoanekoli)/N	102	56	3	53
Seela Kati (Seela)/N	244	59	2	57
Total	2,093	795	42	753

Completing the survey work

Despite a relatively large household sample size, the work proceeded relatively smoothly. Villages in Meru are located within a few kilometres of one another and they and the sampled households could in most cases conveniently be reached by walking. In the course of the work, we developed routines to facilitate the interviewing and minimise the incidence of non-response. In each subvillage covered, a local assistant was recruited who served as a guide and facilitator and who made appointments for interviews. This person was also a valuable source of information for the cross-checking of respondents' answers to the survey questions. An interview took between 30 and 45 minutes, each enumerator completing between six and ten interviews per day. We proceeded slowly, interrupting the interviewing every now and then to do other tasks and in order to avoid interviewer fatigue. The survey started in September 1995 and was completed by March 1996.

After completion of the survey, however, we discovered that it had been a mistake to develop and test the survey questionnaire in Singisi, a village that with respect to land use was different from other villages, notably those with additional land above the coffee-banana belt. In those villages, the questionnaire had failed to record households' land holdings on the upper

mountain reaches as well as the widespread cultivation of maize in that area. It had also failed to cover the short-term transfers of land that on a rent and lend basis were common on land for annual crops but which were virtually non-existent within the coffee-belt and in Singisi where perennial crops dominated.

Given the ease with which the survey had been completed, we decided to revisit the interviewed households in order to collect this vital information. For this task a short complementary questionnaire was developed and administered one year after the first one (Appendix II). In this case each interview lasted only 10-15 minutes. The whole operation took less than two months, and was completed in February 1997. For practical reasons, we accepted a higher incidence of non-response (respondents could not be met) during this exercise. In all, we re-interviewed 712 households.

Meanwhile, the completed and pre-coded questionnaires, after being checked and corrected, were handed over to a private computer company in Arusha for data entry into the SPSS program making it ready for statistical analysis.



Photograph 3.1: Conducting a survey interview.

A note on sampling errors and precision of estimates

On a few occasions, colleagues commented on what they considered to be an unrealistically large sample size. Agreeably, in view of the common logistical/practical problems involved in doing fieldwork in rural Africa, many surveys have to compromise size (and quality). Conditions in Meru, however, were favourable enough to allow for a larger sample at reasonable cost in money and time. Rather than being concerned about the sample size being too big, it is more relevant to ask about the value of surveys based on samples that are so small that sampling errors substantially reduce the generalisation value of the findings. Save for stratification of the sample frame, increasing the sample size is the most effective way of reducing errors that derive from sampling. It is also the only way of ensuring reasonable precision of estimates when the analysis requires a division of the sample into sub-groups, as it often does (Fowler, 1984, 33ff).

A not uncommon mistake in survey analysis is to treat estimates derived from multi-stage sampling designs as if they were coming from samples drawn by SRS (Kish, 1957). In multistage sampling, however, the final standard error (SE) derives from all sampling stages, a circumstance that has to be accounted for in order not to risk accepting, for example, a correlation or difference as significant when in reality it is not. Increasing the number of clusters (e.g. subvillages) in the sample reduces this kind of error, but such a measure is often not possible given the financial and other constraints of a survey plan.

Accepting the multistage survey design as an inevitable compromise, there are different methods of dealing with the problem of sampling errors. One way is to multiply the SE derived from SRS by a correction factor of say 1.2 or 1.3 or to calculate the SE on the pretension that the sample is two-thirds its real size (Kieholt, 1985). The loss of precision due to the survey design is not equal for all variables, however. It is most pronounced for variables that are correlated with the first stage sampling units, which in our case are subvillages, while it may be negligible for variables that are unaffected by the geographical location of respondents. In view hereof, there is a point in calculating the design effect for individual variables, or at least for those variables that are of central importance for the analysis. For our survey

design, the procedures for this calculation and the appropriate formulas are given in Appendix III.²²

We found that for some variables (e.g. educational level) there was virtually no change in the confidence intervals around the mean estimates due to the two stage survey design. However, for several other central variables (e.g. number of dairy cows, size of cultivated land, occupation etc.), the intervals diverted substantially from those we would have obtained had the sample been drawn by SRS, the main reason being the relatively small number of first stage sampling units in the survey. With this in mind, our calculations showed that for a correlation or difference to be significant at 0.05 level with our less than optimal survey design, it would need to be significant at a level *below* 0.01 under the assumption of SRS. Since doing calculations for all the variables appearing in the analysis is rather cumbersome, we applied the above condition as a rule of thumb. In view hereof, we need to treat results at 0.01 level or above with caution. Occasionally, we conducted within cluster (subvillage) significance tests as indication of the overall validity of a mean estimate or difference calculated for the sample as a whole. Finally, it should be noted that cross-tabulations and non-parametric tests of significance such as Chi^2 were frequently used throughout the analysis. These tests remain unaffected by the survey design but are of course sensitive to the overall sample size.

Wealth rankings

In all subvillages surveyed we undertook wealth rankings according to the procedures described by Grandin (1988). Besides being a valid method for assessing and typifying socio-economic strata in situations where the survey instrument is not feasible, it has the additional advantage of serving as a most rewarding entry point for interviews on social inequality, mobility and relations between different economic strata. The wealth ranking technique can easily be applied as a group exercise involving several informants, hence stimulating the flow of information on these issues. It has gained a lot of

22 These formulas have been compiled with thanks by Professor Jan Lanke at the Department of Statistics, Lund University.

popularity in recent years as an additional tool in conventional types of research (see, for example, Loiske, 1995; Scoones, 1995; and Seppälä, 1998).

In our case, we did the rankings with both individual informants and groups of two to three people. Informants were both men and women, most of them in their forties or fifties and of 'average' wealth. We completed a minimum of four independent rankings in each location, a number we considered sufficient given the high consistency in rankings between different informants (correlations between different informants ranged from 0.7 to 0.9, measured as Spearman's rho).

This being said, wealth ranking also has limitations. First of all, it represents a subjective judgement of a person or household's wealth that does not always tally with actual resource endowments or incomes. This proved for example to be the case for gender. Women are in most instances given a lower rank than men, although their resource endowments when measured objectively may be similar to those of men. This is one example of where data from survey and rankings may complement each other. The ranking informants understood wealth as ability or capacity (*uwezo*) to generate income, hence adding the dimension of power to the wealth concept. In the case of women, ability was often circumscribed by men. This dimension was brought out clearly by the ranking discussions but failed to be captured by the survey (see also Chapter Fifteen).

A major limitation of wealth ranking is that it is only valid within a rather limited local context. For obvious reasons, it was not possible to rank the full sample of about 750 households from all over Meru. The subvillage ranking exercises and the survey revealed that different wealth criteria existed in different areas depending on local variations in income level, farm size, access to water, type of crops grown, level of market integration and so on. Since wealth rankings only rank households in relative terms without consideration of the absolute size of their assets, a household positioned in the wealthiest group in one village could in another village be downgraded to, say, a middle wealth group depending on the resources commanded by the other households in that area. Wealth positions stemming from rankings in different locations are therefore not fully comparable.

In view of hereof, we developed a wealth index based on assets and income indicators measured in the survey.²³ In the subsequent analysis, this index was used as a quantitative wealth indicator and also served as a basis

for wealth group classification (see further Chapter Fourteen). Household rankings helped validate this classification and provided information as to the further content of the resulting wealth groups, their history and relation to each other. Correlations (Spearman's rho) between household position as derived through wealth ranking and wealth indexing, respectively, ranged from 0.62 to 0.74 in the different subvillages, indicating quite some correspondence in the two methods of assessing inequality.

Using wealth ranking to assess intergenerational social mobility

When conducting the wealth rankings, we discovered the potential of this technique for additional applications. One was as a tool for measuring and assessing the consistency of wealth rank over time, i.e. intra- and intergenerational inequality and social mobility. The background is the chronic absence in smallholder societies of reliable time series data on changes in incomes and ownership of strategic resources, i.e. wealth. Wealth rankings provide a method for overcoming this constraint. The advantages and limitations for this application are similar to those described earlier. The method yields an assessment of changes in relative wealth position but gives no information on trends or on income gaps in absolute terms.

The age group or age set institution of the Meru gave us an approximate indicator of respondents' age without reliance on survey data. In one subvillage, Mavinuni subvillage in Singisi village, we conducted a census of the male household heads from the different age groups. We then used village informants to define the internal kin relationships of the age group members. In this way we identified lineages involving sons, fathers, grandfathers, brothers, uncles etc. Using informants, we did independent rankings of the individuals in each of the age groups in turn. Since individuals were only compared with their own age mates, we managed to control for the life cycle effect. This enabled us to assess the consistency in relative wealth position

23 In the index is included farm size, number of coffee trees, number of cows, ownership of consumer durables, and years in school. Education is treated here as an asset and as a substitute for the level of off-farm incomes, which is assumed to depend on educational level (for further arguments in this direction, see for example Collier, 1986, 87ff).

among near relatives of different age groups/generations, hence giving us a measurement of the amount of intergenerational social mobility in the village.

In addition, the interviews done in connection with these exercises provided us with a picture of how indicators and criteria of wealth had changed over time, and it gave us a view of how living standards, income levels, poverty and prosperity had developed in the village, seen through the life experiences of the villages themselves. A description of the ranking procedures is given in Appendix IV. The empirical analysis is presented in Chapter Seventeen and Eighteen.

Secondary data

Essential in this study is the historical grounding of the analysis. The bulk of historical data was collected through secondary sources, including library archives. Additional information was obtained from interviews with elderly Meru. Descriptions of the Meru appear in early reports and letters sent by missionaries to their home countries and in records by the colonial administration. The first attempt of a systematic ethnographic compilation of the Meru was in a brief report by the government anthropologist Hans Cory in the 1940s (nd). It took another two or three decades, however, before a major ethnographic study of the Meru was published. This was in 1970, then by a Canadian anthropologist, Paul Puritt (1970). Also during this time, popular books containing historical documentation and written by Meru activists and others were published (see, for example, Japhet and Seaton, 1967; Mbise, 1973; 1974; and Nelson, 1967).

In 1986, a Tanzanian historian, Nestor Luanda, produced a historical documentation of the Meru and the Arusha and their relation to settler agriculture. The most thorough historical documentation of pre-colonial and colonial economic and political development on Mount Meru, however, is provided by Thomas Spear who during the course of this study published a number of papers and a book, 'Mountain Farmers' (1997). This book served as an important source of historical data and references for this study (particularly for the background presented in Chapter Four and Five), save from being a source of inspiration for investigating developments in the

post-colonial period. During the 1990s, a number of additional studies have surfaced on the Meru. Liv Haram (1999) and Catherine Baroin (1996), both anthropologists, have done studies on social change and on women. Tim Kelsall, a political scientist from University of Newcastle-upon-Tyne, has focussed on local politics (1998; 2000), and Per Assmo, a geographer from Gothenburg University, has concluded a study on livelihoods and land degradation on the Arusha part of Mount Meru (1999). In addition to these monographs, there has also been a steady flow of ministerial and consultancy reports, and other studies on Arumeru District from the 1970s to date, illuminating more recent changes in the area.

In addition to and complementary to the publications mentioned, we consulted libraries and archives in order to get access to the original documents and for additional historical information. These included the Makumira Theological College outside Arusha (for missionary reports), the East Africa Collection at the University Library in Dar es Salaam (Hans Cory papers) and Tanzania National Archives (TNA) in Dar es Salaam (for colonial records). We obtained District maps and aerial photographs of Mount Meru from the governmental Bureau of Survey and Mapping, and from Ardhi House, Ministry of Lands²⁴ in Dar es Salaam. We also used a number of National Census reports produced by the Demographic Census Unit of the Bureau of Statistics.

Crop statistics have been obtained from a variety of sources, including Arusha Cooperative Union (ACU) and the District and Regional Offices of the Ministry of Agriculture (MOA)²⁵. It should be noted that official crop statistics are notoriously unreliable and must be used with caution. There is, for example, a considerable discrepancy between data obtained from different official sources, such as MOA, Bank of Tanzania, the World Bank, FAO etc.

24 i.e. Ministry of Lands, Housing and Urban Development.

25 i.e. Ministry of Agriculture and Co-operatives (MAC).

Closing the land frontier: land policies and population growth in the 20th century

Introduction

In this and the following chapter we will make a recapitulation of the settlement and demographic history of the Meru, spanning a period that is more than a century long. During this period agriculture has intensified, sources of income have become more diversified, and the basis for wealth has gradually shifted from cattle to land, and from land to off-farm incomes. These processes reflect both a growing commercialisation of the local economy and a shortage of land for farming. Market demand and land shortage, and the political measures that have accompanied them, are crucial factors for the way livelihoods and agrarian change have developed in Meru. Land shortage is primarily caused by a sustained and rapid population growth but also by a far-reaching alienation of land during early colonial rule, a circumstance that to this day continues to affect life on the mountain. This chapter provides a background to this development.

Early population trends and land use pattern²⁶

There is little information available as to the size and development of the Meru population before the arrival of the German colonial power. Höhnel and Teleki, the first Europeans to visit Meru in 1887, estimated the Meru population to about 1,000 people scattered in hidden settlements in the primeval forest that covered the middle mountain slopes (Höhnel, 1894, 142-53, in Spear, 1997, 32). Another estimation, made in 1902, shortly after the German conquest and the same year as the first Lutheran mission was established in Meru, arrived at a population of 5,506 people. In view of subsequent records, the first estimation appears to be completely off the track. Also the one of 1902 appears to be an underestimation, given the difficult conditions of enumeration at the time.

The Meru are most certainly a branch of the Chaga inhabiting Western Kilimanjaro, which is separated from Mount Meru by a dry plain some 40 or 50 km across. From Western Kilimanjaro, the members of a few clans migrated and settled on the central slopes on Mount Meru, probably during the seventeenth century. Mount Meru at that time was largely uninhabited, except for isolated groups of hunter-gatherers, who were either assimilated or chased away by the agro-pastoral Meru (Spear, 1997, 17ff).

The pioneers settled in forest clearings in the middle-zone of the southeastern slopes between 1,400 and 1,700 meters. Here, the climate and soils were excellent for the cultivation of bananas, which at the time was the main staple food of the Meru. Their mountain and forest residence also offered protection from the attacks of Maasai pastoralists controlling the plains, and it left the Meru in relative isolation of the surrounding world until the mid 1800s (Spear, 1997, 25ff).

In this secure and fertile environment, the settlers cleared the forest for permanent cultivation of bananas around their homesteads, known as *vi-hamba* (sing. *kihamba*). Surrounding such a kihamba were fields for annual crops such as maize, beans and millet grown in a rotational manner. Further

26 The sections on the pre-colonial and colonial situation draws largely on the thorough documentation and research by Professor Thomas Spear as presented in his book 'Mountain Farmers' (1997). Information on this period is also found in Luanda (1986), Nelson (1967), and Puritt (1970). Also, a number of elderly Meru have been interviewed and historic documents in the National Archives have been consulted. References are given in the text where appropriate.

out were small clearings where the Meru could graze their cattle and small stock. These were brought home at night, providing milk for the family and, not least, manure for the regeneration of soil fertility of the banana grove (Spear, 1997, 26). Thus, the mixed farming system that developed on Mt Meru resembled the one already established on Mt Kilimanjaro. It provided families with a reliable and diverse diet, which in the favourable and protected mountain environment most likely must have made the population grow steadily.

As sons reached marriage age, they expanded into the surrounding forest establishing their own *vihamba*. The youngest son took over the farm of his parents looking after them at old age. Parents, sons and grandsons formed lineages, claiming a common descent from their original male clan grandfather whose shrine they worshipped on their ancestral land. The clan, the male lineage and the land constituted the main elements in the social organisation and identity of the Meru. Clan elders mediated disputes over land and other issues and sanctioned marriages between members of different clans. The Meru were polygamous, exogamous and patrilocal. Upon marriage, a wife was brought from another clan to the home of the husband where she was allocated land for cultivation and given the clan name of the husband (Puritt, 1970; Spear, 1997).

Economically, the homesteads and families were relatively independent of one another, each producing its necessary share of subsistence crops. At times, however, relatives from different homesteads could join forces in working parties for clearing the forest or for completing other heavier tasks (Spear, 1997, 26). All clans were equal, except for the royal clan, the Kaaya, from which the chief or the *mangi* was chosen. The *mangi* and Kaaya clansmen, however, did not differ from other clan members in terms of economic wealth. The power of the *mangi* was based on personal qualifications as a leader, as defender of tradition and as holder of supernatural power and witchcraft (Cory, nd-b; Spear, 1997, 27).

For every new generation, and with the population growing, settlements expanded across the slopes. The lineages stemming from the first settlers tended to congregate along vertical segments of the mountain that were separated from each other by deep river gorges cutting through the landscape from the mountain top to the plains. Later, as population increased and all land in the original settlement areas became occupied, new land was cleared

further up the mountain, to about 1,800 meters, and on the lower slopes around 1,300 or 1,200 meters, with the result that clans and lineages over time became geographically dispersed (Spear, 1997, 26-7).

There is no reliable information as to the size of the original Meru population that settled on Mount Meru. However, one can assume that the mountain dwellers in their favoured environment continued to increase in numbers over the following centuries, partly from natural increase, partly from immigration. After the settlement of the two original clans, the Kaaya and the Mbise, there was a steady influx of migrants to the mountain. These were in most cases accepted by the residents and allocated land for cultivation. Sometimes immigrants were adopted as members by existing clans. At other times, they formed their own clans. The origins of the approximately 25 clans now represented in Meru reveal that most migrants were of Chaga origin, many of whom arrived following the internal wars on Kilimanjaro during the latter half of the 1800s. Many migrants also originated from the plains, being Maasai groups shifting from pastoralism to sedentary agriculture and, as a result, were assimilated into Meru culture and language.

The 1800s – a century of political conflict and colonial conquest.

The 19th century was a tumultuous one for the Meru and the other people inhabiting the Northern Highlands. Groups of Maasai fought over control of the pastoral resources on the plains and in the Pangani valley, wars continued on Kilimanjaro as chiefs there competed for political domination, Arab traders and caravans brought new means of wealth and sources of conflict, and towards the last quarter of the century, German troops advanced from the coast up through the Pangani valley. Around 1830, the Arusha, an agro-pastoral branch of the Maasai displaced in the ongoing wars, had settled on the southwestern slopes of Mt Meru, near present Arusha town (Spear, 1997, 28ff, 35ff; for a general background, see Iliffe, 1979, and Koponen, 1988).

While the Meru until the second half of the 1800s had remained relatively secluded from the political and economic turmoil on the plains, the settlement and subsequent expansion of the Arusha were intimately linked to this

unrest. Soon enough, the Arusha took the Meru out of their relative seclusion and isolation. As documented by Spear (1997,35ff), the economic expansion and rapid growth of the Arusha population was largely due to their continued participation in the Maasai economy. They exchanged crops for cattle, but without getting involved in the devastating wars that continued to ransack the people on the plains. In addition, Arusha Juu (which later became Arusha town) developed into a major trading centre and provision site for the caravans going to western Kenya. Apart from prospering from these exchanges, the Arusha also raided widely for cattle and women, and as a result of an increasing ratio of young women to men, experienced a rapid growth of population. Although the Arusha came later to the mountain than the Meru, they soon overtook the Meru in terms of human numbers and economic and military power.

By 1850, the Arusha frequently raided the Meru for cattle and women. Also young males were captured and incorporated into the age-set system of the Arusha. By 1860, Arusha had pushed the Meru back from the Temi to the Songota/Nduruma River (see also Map 1.3). The final defeat of the Meru in the 1870s led to the adoption by the Meru of several Arusha customs. In 1880, Meru youths joined their Arusha neighbours in the initiation of the Ultalala age-set. The adoption by the Meru of the Arusha age-set organisation signalled a decisive shift in Meru political and economic life (Spear, 1997,28ff;).

Politically and socially, Meru remained a chiefdom and clan elders continued to fulfil most of their social and ritual functions. However, as the locus of political power “...shifted from control over land and kinship to that over cattle, influence and power shifted from family patriarchs, clan elders and the mangi, all of whom exercised control over land, to the age-sets and the young warriors, who seized cattle and women.” (Spear, 1997,34). The age-set leaders and the young warriors had substantial political power and they largely acted independently of the chief and the clan elders during this time. This was especially the case for the Talala or Ultalala age-set (1881-1905), who due to their capture of cattle and women became relatively independent of the elders for family formation and economic resources (ibid, 28ff).

From having led a relatively secluded and isolated existence on the mountain, the Meru were thus drawn into the cattle economy of the plains. Meru and Arusha warriors joined forces in cattle raiding going as far as present

Mbulu District and to the northern side of Kilimanjaro. The Meru were to a much lesser extent than the Arusha involved in the long distance caravan trade, however, although some Meru leaders from time to time did participate in such exchanges. They continued to nourish their contacts with their Kilimanjaro neighbours, with whom they intermarried and traded, and they adopted into their clan and age-set system people who fled from the wars to take refuge on Mt Meru.

As the political situation on mountain remained relatively peaceful under the domination of the Ultalala age set, the closing decades of the 1800s were for the Meru more stable than the preceding decades. Stability was relative, however. For the pastoral people on the plains the last decades of the 1800s were difficult as wars, outbreaks of cattle disease and repeated years of drought and epidemics took a heavy toll on human numbers and cattle (Spear, 1997). The mountain dwellers were in a better position to survive these evils, but eventually disaster struck also on them, this time in the form of German military intervention.

As to the size of the population, the Meru suffered from losses inflicted on them by the Arusha raiding their cattle and women during the third quarter of 1800. During the same time and for the rest of 1800, however, the Meru received numbers of refugees following the wars on the plains and on Kilimanjaro. Spear's cautious judgement is that these two forces may have cancelled each other out in terms of population size, or even caused the Meru population to decline as the nineteenth century came to an end (ibid, footnote 43). This is contradicted, however, by evidence of expanding Meru settlements to the lower mountain slopes during the last two decades of the century. This expansion was temporarily halted around 1900, following the devastating effects of German military operations.

Singisi settlement

The 1870s and 1880s, saw the first Meru settlers arrive in present day Singisi, Poli and Nshupu villages, located on the lower slopes of the mountain at around 1,200 and 1,300 meters.²⁷ Singisi during that time was a typical

27 Interviews with wazee, Naiman Iyawe Kyungai, Robert Ndelekwa Kitomari, Yona Kimishua Akyoo, Abraham Sindato Pallangyo and other Meru.

frontier area into which members of different clans came from various parts of the mountain in search of land for cultivation. The first immigrants settled in the upper parts of the village around 1870 or 1880, south of the Seela market place in the subvillage known as Kyaraa (see Map 3.1). Kureke of the Kyungai clan came from present Mulala village and joined with Akyoo clan members from Sura and Urisho. Kureke had wives stemming from the Kitomari clan in Ndoombo village, and three brothers from this clan (Ucheka, Mbisere and Meena) settled in Kyaraa after an outbreak of smallpox killing their parents and other relatives in their home village Ndoombo.

As land in Kyaraa became occupied, descendants of the first settlers and newcomers to the area were forced to look for land south of the Nsungu River at the foot of Shimbumbu Hill. This area, consisting of a gently sloping and fertile plain between the Malala and Tengeru Rivers, in what is now Mavinuni and Maringa subvillages, attracted a lot of immigrants during the decades around the turn of the century (Map 3.1).

In this way, influential lineages like the ones stemming from Ikamba and Lemshumba Kitomari (sons of Mbisere) and Ngowi Kyungai (a grandson of Kureke) came to be established in Singisi. Among other influential and early settlers who managed to clear larger portions of land than those coming later, were members of the Thalami family of the Mbise clan, coming from Nkoaranga, and Seyare of the Kaaya clan stemming from Ulonga. Also members of the Pallangyo and a number of other clans settled in Singisi during this time. Kitomari, Kyungai, Akyoo, Pallangyo and Mbise are today the numerically dominant clans in the village.

Singisi was the only place in Meru where indigenous settlement and expansion at the time of the German arrival had reached the lower slopes and thus was included within the demarcation put up by the German authorities in order to separate alienated and native land. The rapid settlement of Singisi by Meru lineages before and around 1900, and the closing off of further expansion by the colonial authorities shortly thereafter, are among the historic circumstances that account for the congestion and population pressure characterising Singisi village today. While pockets of virgin forest remained in Singisi into the 1920s and even early 1930s, settlement there developed more rapidly than hitherto had been the case in Meru. And earlier than elsewhere, Singisi farmers took their cattle out of the village for grazing, looking for pasture on the European estates or on the plains. They were also among

the first ones to expand their cultivation to the plains, clearing land in Kikwe and Karangai as early as in the 1930s and 1940s.

Despite the situation in Singisi, however, the overall picture is one of a small but slowly growing population towards the end of the nineteenth century. Since land was abundant, the main measure through which food provision was secured for a growing family was by clearing new land for settlement, cultivation and grazing.

Land policies and population trends during early colonial rule

When the Germans gained control over the Mount Meru area around 1900, it was through brutal military retaliations that left the economies of the Meru and Arusha devastated.²⁸ Meru and Arusha warriors of the Ultalala age-set had in 1896 killed the first two missionaries who had come to Meru, *mangi* Matunda being unable to control the warriors. Following this event, the German military commander launched a series of punitive expeditions through which Meru resistance was broken, a large number of warriors were killed in battles, cattle and crops were confiscated, and Chaga wives repatriated to Kilimanjaro. In Singisi, people took refuge higher up the mountain while temporarily abandoning their exposed homes on the lower slopes.

Subsequent German rule involved forced labour and taxation, and the alienation of land to the north and south of the mountain for South African and European settlers. Militarily defeated and with their economy and political organisation devastated, the Meru at the time had little to put up against the demands for land forwarded by their new masters. Also, land at this time was abundant. With the exception of Singisi, uninhabited land separated native and alien settlement around 1900. The situation of land abundance would change soon enough, however.

As a result of the land alienation, the Meru and the Arusha were enclosed by an 'iron ring' of settler estates and plantations at about 1,200 meters al-

28 Accounts of these events are found in, for example, Luanda (1970), Nelson (1967), and Spear (1997). By elderly Meru, the period is talked of as "Soto ya Lobulu" (the famine of Lobulu), referring to the hardships experienced by the Meru and which culminated in the hanging of their chief Lobulu by the Germans in 1899.

titude that effectively prevented their expansion to the fertile lands at the foot of the mountain (see also Map 3.1). As the population increased, European settlement was looked at with anger and resentment among the Meru.

As early as 1920, the British District Commissioner in Arusha noted that the Germans had not fully considered the need for setting aside sufficient grazing areas for the so-called natives.²⁹ As German property was disposed of after the war, the Commissioner argued that the central administration had an opportunity to rectify past injustice by returning ex-enemy estates to the native population.³⁰ Instead, the central authorities chose to sell this property to British and other European settlers. As noted by Spear, this attitude was typical of British land policies throughout the colonial period. While local officials expressed sympathy for indigenous demands for more land, in practice the British land policy supported settler agriculture and contained few measures that could help ease the congestion that was building up on the mountain as a result of the growing population.

During the early German period, however, shortage of land was not a pressing problem. On the contrary, the harsh conditions under early colonial rule are likely to have caused stagnation or even decline of the native population leaving sufficient land for those who remained. The first population figure we know of refers to the German estimation of 1902, as mentioned. It arrived at a population of 5,506 people but was probably an underestimation (Table 4.1).³¹ Also the census of 1921 is seen as largely inaccurate. This was the main reason why a full census was carried out only seven years later, in 1928.³²

Under the conditions of early colonial rule, the Meru population probably grew only slowly, at least until the end of the First World War. Mortality, and especially infant mortality, remained high, as reported by mission-

29 Following the German defeat during the First World War, the British administered Tanganyika as a League of Nations mandate.

30 TNA, AB367, Old File 2963/1. Memo from Arusha DC Browne to Chief Secretary in Dar es Salaam, dated 27/8/1920, regarding the *Extension of Native Reserves*.

31 Lutherisches Missionsblatt (1903), p511-2, in Spear (1995, 124ff). We do not have much information about how this estimation was carried out. The difficulties involved in counting people and the good reasons among the Meru not to report to the German authorities, probably makes this estimation uncertain.

32 TNA file 69/AR/380/1; *Report on the 1928 census, Arusha District*

aries stationed in the area.³³ Only slowly did the Meru economy and standards of nutrition and health improve. While the German conquest had shattered the Meru economy, subsequent colonial rule put an end to the internal wars that had beset the region for much of the 19th century. Also, the widespread raiding for cattle was reluctantly coming to an end. And, as the British colonial administration consolidated towards the end of the 1920s, measures were taken that slowly began to bring down prevailing high levels of mortality.

At an early stage, the missionaries had introduced basic health care and rural dispensaries. In the 1920s, the British colonial administration complemented these efforts through campaigns for the eradication of human epidemics. In 1925 alone, for example, 12,000 people in the district were inoculated against smallpox.³⁴ Also, measures for the control of cattle disease were introduced, including cattle dip stations and restrictions on the movement and sale of cattle to certain areas and places. The infrastructure was improved and trading posts established in Tengeru and Usa River, along with other measures aimed at facilitating the expansion of commercial agriculture.³⁵ Most of these measures were made primarily in order to improve the conditions of settler agriculture, but their effects indirectly benefited the local communities as well. During this time, the first native coffee growers appeared, much to the resentment of European plantation owners.

The annual reports coming from the district Office in Arusha in the 1920s consistently tell about food surpluses in native areas.³⁶ The Meru marketed part of this surplus, which signalled their increasing participation in the expanding market economy. Following the growing economic pros-

33 *Lutherisches Missionsblatt* (1914, 82-86, in Spear (ed), 1995), containing a description by Sister Seeseman based in Nkoaranga on the poor health and nutrition conditions of women and children. The description pertains to Kilimanjaro, but was included in the reports coming from Meru on the basis that conditions in the two areas were similar and direct comments on the situation for women during early colonial rule were lacking from Meru.

34 TNA, AB31, Old File 1733/1; Arusha District Annual Report (ADAR) for 1925 by DC Browne, dated 18/1/1926.

35 The railway line from Tanga to Moshi, completed in 1911, was in 1929 extended to Arusha hence providing the settlers with a more reliable outlet channel for their agricultural produce. See TFA, ADARs for 1920, series AB, Old File 1733. See also Sayers (1930), and Spear (1997).

36 TFA, ADARs for 1920, series AB, Old File 1733.

perity and political stability, mortality declined and caused the pace of population growth to increase towards the end of the 1920s.

As a result, the remaining lower mountain slopes in West Meru were cleared all the way down to the settler estates, and expansion began into the north-eastern part of the mountain including the present-day villages of Ngyani, Nkoanekoli and Kilinga.³⁷ Population size on the mountain increased substantially between 1928 and 1948, and appeared to double again in the following 20-year period, as can be seen in Table 4.1 on the section covering developments in Meru core area/mountain. In the table detailed information is given on population size for the administrative divisions (locations) valid under colonial rule as well as for those of the post-independence period (wards). For population size in areas below the mountain, figures are given as sub-totals. Annual growth rates refer to the period between two subsequent censuses.

We must interpret population census data cautiously. Not all of the spectacular growth rates appearing when the 1957 and 1967 censuses are compared with earlier ones, can be attributed to natural increase or immigration. In fact, the spectacular jump in growth rates between 1948 and 1957/1967 is largely artificial, being caused by the inclusion into Meru of areas which in the previous censuses belonged to different enumeration tracts (for details and discussion on census data, see note at the end of the chapter). For this reason, it is difficult to disentangle from census data the exact population changes of the Meru. Table 4.1 fairly accurately describes the growth of the Meru population up to and including 1948. Thereafter, figures include an increasing number of other ethnic groups.

37 Accounts of these events are given by a number of elderly respondents interviewed in these villages.

Table 4.1: *Population in Meru 1905-1988³⁸ and annual growth rates (per cent).*

<i>Core areas/mountain; colonial locations and post-colonial wards:</i>									
Location/Ward	1902	1921	1928	1931	1948	1957	1967	1978	1988
Nkoanrua	-	2,015	2,088	1,931	3,366	-	-	7,499	9,110
Akheri	-	1,620	1,745	1,627	2,112	-	-	11,597	14,065
Ndoombo	-	823	985	1,037	1,736	-	-	-	-
Seela/Singisi	-	1,330	1,422	2,347	2,436	-	-	5,651	6,426
Poli	-	1,868	1,622	2,129	2,127	-	-	7,584	9,391
Nkoaranga	-	2,130	2,093	2,165	2,709	-	-	12,382	15,327
Sura	-	1,073	1,016	1,027	2,349	-	-	-	-
Mulala	-	807	861	871	2,093	-	-	-	-
Songoro	-	-	-	-	-	-	-	6,293	8,093
Sub-total	5,506	11,666	11,832	13,134	18,755	32,357	36,832	51,006	62,412
Growth rate	-	-	-	3.6	2.2	6.6	1.3	3.1	2.1
<i>Expansion areas/plains:</i>									
Sub-total	-	-	-	-	4,667	5,985	39,543	64,226	80,860
Growth rate	-	-	-	-	-	2.9	24.6	4.7	2.4
<i>Total population and growth rates:</i>									
Total	5,506	11,666	11,832	13,134	23,422	38,342	76,375	115,232	143,272
Growth rate	-	-	-	3.6	3.5	5.9	7.6	3.9	2.3

For comparison, Table 4.2 gives population totals for all areas and ethnic groups under the former Meru Chiefdom as well as for the entire district. Given the uncertainty of early census estimates and the shifting geographical base of enumeration, assessments of population trends are necessarily approximate. However, knowing that the district historically has been one of large immigration and that development level and food and health standards have been better than elsewhere, this leading to lower mortality levels,

38 Figures refer to the population living within the former Meru Chiefdom. They include the following sources, some of which are also cited in Spear (1997,127-8): **1921-31:** Arusha District Book and TNA files 69/AR/380/1-4; **1948:** *African Population of Tanganyika Territory, 1948* (TNA files 69/AR/380/4 and 69/AR/316/IV). **1967:** *1967 Population Census* (United Republic of Tanzania, 1969, 267); **1978:** *1978 Population Census* (United Republic of Tanzania, 1981, 47ff); **1988:** *1988 Population Census* (United Republic of Tanzania, 1991, 419ff). The **1957** census is published as *Tanganyika African Population Census, 1957* (Nairobi, 1958, cited in Spear, 1997,128). We failed to trace any details of village figures, however. Figures in the Table are based on a sub-document (East African Statistical Department, 1958) and on Spear (1997,128).

a cautious conclusion is that Meru population growth rates from the 1930s onwards exceeded two per cent per annum and are likely to have reached or surpassed three per cent by 1950.

Table 4.2: *Totals and growth rates for the district, and for the former Meru Chiefdom ('native' and 'alienated lands') in (present Poli, Mbuguni, Kingori divisions) 1928-1988. (sources: see Table 10:1).*

	1931	1948	1957	1967	1978	1988
Total Meru Chiefdom*	<i>18,134</i>	<i>36,873</i>	50,018	76,375	115,232	143,272
Growth rate	-	4.4	3.5	4.5	3.9	2.3
Arusha/Arumeru District, rural areas**	-	108,101	137,230	181,746	269,584	353,907
Growth rate	-	-	2.7	2.5	3.8	2.8
Arumeru District	-	-	-	167,854	238,020	321,898
Growth rate	-	-	-	-	3.3	3.1

* Figures in italics are estimations. For 1931, TNA file 69/380/3 contains estimations of the non-Meru population to about 4,500. The total population of Europeans/Asians in the district was 1,455, of whom we have treated one third (500) as estate residents in Meru (TNA, 69/380/1). For 1948, the total African population is 35 873 (East African Statistical Department, 1953a, 45). The European/Asian population in the district was 3,309 persons (East African Statistical Department, 1953b,58). About one third, 1,000 persons, are referred to estates within Meru.

** Figures include population in present Arumeru and Arusha Districts but exclude Arusha town. The former Arusha District was divided into Arumeru and Arusha Districts in the 1970s, the latter containing Arusha town.

Struggle for land: The Meru Land Case

From the 1930s, land alienation developed into a major issue preoccupying native leaders and the colonial administration for decades to come. For reasons of space, we will only summarise the land problem here, but it is important to note that this question has had a decisive impact on how agriculture and livelihoods developed on Mt Meru.³⁹ As land for grazing became exhausted on the mountain, the Meru took their cattle herds to the plains

³⁹ See Spear (1997) for a comprehensive historic documentation of the land issue of the colonial period.

for grazing on a daily basis, across the land of the settlers. The constant 'trespassing' of Meru and their cattle was an escalating source of friction between settlers and natives, calling for an overall settling of the land issue.

Colonial land policies did not only restrict Meru expansion downhill. The Germans had established a boundary at 1,700 meters in order to protect the rain forest circumscribing the mountain. When control slackened during the First World War, Meru expanded up to 1,800 meters until the British after the war re-established the Forest Reserve (Spear, 1997). In addition, the administration forcefully imposed strict regulations and conservation measures regarding the cultivation of steep slopes and riverbanks, and they protected the forests covering the distinct hills rising from the middle and lower mountain slopes.

For a long time, repeated appeals by the Meru and the Arusha for more land met with an understanding but rather passive attitude from the side of the colonial administration. In 1925, eight settler farms had been reclaimed by the administration and handed over to the Meru and Arusha, and in 1928-31 the Meru acquired an additional two or three by purchase. These steps were in accordance with the recommendations of the Land Development Commission set up in 1929/30 (Davies and Mason, 1952; Wright, 1966). Some additional farms were purchased in 1933; that is the farms were purchased by the colonial government and handed over to the Meru on a mortgage basis, the entire debt amounting to £17,703 and requiring an annual increase of the poll tax of Shs 2/- per taxpayer for the following 26 years. The extra tax was paid only for six years, however, until 1939 when the remaining payments were waived.⁴⁰

These measures, however, only offered temporary relief and the entire situation remained unsatisfactory. We should also take note of the fact that most of those estates, which heavily indebted to banks in London went bankrupt following the collapse of coffee prices after 1929, were taken over

40 See Davies and Mason (1952) and Wright (1966). These added tax payments met with resentment by the Meru and the Arusha. In two memos to the Chief Secretary in Dar es Salaam, the Provincial Commissioner, F.C. Hallier, recommended that the government "...should foot the bill..." on the basis that it would be "...politically unwise to connect expansion with increased taxation.", and that it is "...nothing short of frank injustice to expect him [the native] to buy it back while we continue to draw revenue from land that was once his.". TNA file 605 on *Land for future expansion of the tribes*. Memos dated 2nd and 12th August 1938, citation from the first.

by other Europeans rather than returned to the Meru/Arusha. Not until after the Second World War, did the colonial government come up with a comprehensive plan for the redistribution of tribal and alienated land on and around Mt Meru and Kilimanjaro.

At that time, however, the British were not only concerned about solving the land disputes in the north, but of developing Tanganyika economically in order to meet post-war demands for food and raw materials outside the colony. While this concern in many places helped open up market opportunities for African smallholders, in the highlands the situation was more complex due to the presence of the large and influential European settler community. In the post-war period of favourable market prices, settlers were expanding coffee production and commercial beef and dairy farming and they lobbied extensively to convince the administration to act in their favour (Luanda, 1986; Spear, 1997, 210ff).

The British governor's office and the Trusteeship Council generally sided with settler interests. And, immediately after the war, the few German estates that somehow had survived expropriation after the First World War were re-allocated to alien settlers rather than to smallholders, just as had happened in 1920 (Spear, 1997,210ff). As commented by Spear, however, the administration was not uniformly committed to the merits of settler agriculture. On Kilimanjaro, the Chaga had established a major coffee industry outdoing settler farms in productivity and the Meru were on the verge of doing the same. Local officers, although divided on the matter, were in general more understanding and responsive to the claims of the native population than were the officers in Dar es Salaam (see for example footnote 40). Land policies and directives of how to solve the land issue were, however, formulated in London and Dar es Salaam, not in Arusha (Spear, 1997,211).

The report of the one-man committee inquiring the land matter, known as the Wilson Report after the investigator, Judge Wilson, suggested in 1947 that the Meru should gain access to large tracts of land for settlement to the east and south, below the arc of settler estates at the foot of the mountain (Davies and Mason, 1952). While the official granting of more land was much welcomed among the African population, this positive element in the report was completely overshadowed by the proposal that the Meru, in exchange for cash compensation and land in the Kingori area further to

the east, should give up lands in the north-east, in an area known as Ngare Nanyuki. The proposed exchange, if realised, would create an uninterrupted stretch of alienated land from Western Kilimanjaro to North Meru, facilitating the development of European beef ranching and dairy farming in this entire area. The plan met with fierce opposition by the Meru.

The contested area in Ngare Nanyuki and Leguruki provided important grazing grounds for Meru cattle. As land on the mountain was planted in crops, coffee growers and cattle owners from the eastern side of the mountain had taken their livestock further east into the contested area. At the time, more than 300 families had come to live there, developing the land for food crops, and in higher areas also for coffee and bananas. Although the land was broken and rocky, there was plenty of good grazing, and riverine valleys held fertile soils and irrigation possibilities suitable for small farms (Luanda, 1986; Spear, 1997, 222).

As expected, the Meru for whom the presence of settler estates in the first place was indication of highly unjust land policies fiercely rejected the proposal to move. What added fuel to the conflict was the fact that the Meru were asked to evacuate Farms 31 and 328, comprising of about 5,800 acres. These were the same estates they had purchased in 1929/30 and for which they had taxed themselves heavily in the 1930s. The matter developed into what became known as the 'Meru Land Case' and which culminated in the forceful eviction of more than one thousand Meru from their homesteads in Ngare Nanyuki and Leguruki in November 1951.⁴¹ In retrospect, it is tempting to see this forceful eviction as a kind of operation that killed the doctor while treating the patient.

Although the Meru lost their lands in Ngare Nanyuki, their struggle shook the might of the colonial empire and marked the beginning of the end of foreign rule in Tanzania. While the British methods of rule were widely condemned, the Meru's peaceful struggle through their Meru Citizen's Union (MCU) gained international respect. They petitioned authorities at all levels and eventually brought the matter, however unsuccessfully,

41 Accounts of the Meru Land Case are found in a number of sources. The most comprehensive background and description of the developments are presented by Spear (1997). See also, for example, Davies and Mason (1952), Mbise (1974), Nelson (1967), Puritt (1970), and Wright (1966).

to the Trusteeship Council of the United Nations in 1952 (Kelsall, 1998; Nelson, 1967; Puritt, 1970; Spear, 1997).

The Land Case provided an impetus to the national movement for independence and the formation of TANU. It also had a modernising influence on social, political and economic life in Meru. In the 1950s, the fraction of the population that was educated and Christian showed a strong dedication to social development and commercial agriculture. They also constituted the MCU leadership and led the struggle against the British rule and its local representation, the Native Authority under the Meru Chief. In 1953, the Meru constitution was reformed in an attempt to break the deadlock that had beset the area since the late 1940s. Much of the social and economic development that followed the reforms was initiated by the successful cooperative the Meru founded in the early 1950s, and which was working in cooperation with the new Native administration and the Church. During this time, development took off in an atmosphere of self-reliance and popular support. Thanks to the international coffee-boom, farmers benefited from cash crop cultivation and rising per capita incomes. The leaders' relations with the British, however, continued to be frosty and marked by suspicion for much of the remaining decade (Kelsall, 1998; Nelson, 1967; Spear, 1997).

What the Wilson report had failed to bring out became evident before the end of the decade. The costs of developing the lands at Ngare Nanyuki for European dairy and beef farming proved prohibitive. One by one, settlers pulled out, sold their estates or simply left bankrupt, unable to make a profit out of the same land that the evicted smallholders before them had used to support more than 1,000 people. Once again, the Meru purchased settler farms until eventually the whole of Ngare Nanyuki area was returned to them in the early 1960s. Could the evidence of the competitiveness of smallholder farming versus that of estate farming be spelled out more clearly?

Parallel to the Meru Land Case was the land case of Tengeru Coffee Estate (Farm No. 90) in Singisi village. In what is now Nsitoni subvillage, 76 Meru families were tenants within the estate borders (Map 3.1, Chapter Three). The conflict erupted when the estate director, Mr Julian Focsaner, in the early 1940s forbade the crossing of native cattle over the estate and also attempted to evict the tenants in order to develop the land and secure

water rights in the area. The Meru, on their side, refused to move on the basis that the land was theirs and that several families had resided in the area before the arrival of the Germans.⁴²

Meru activists raised public contributions in cash in order to engage a lawyer. They took the case to court, where they lost. They continued to struggle, however, partly with financial and personnel assistance from the Kilimanjaro Union, until the colonial government, having learnt the lesson of the Meru Land Case, interfered and purchased the contested land for the Meru in 1954. On the same occasion the government purchased the adjacent Farms No 98/1 and 99 which became the sites of present Tengeru market, Arumeru District hospital, Patandi Primary School and Tengeru Teacher's Training College. All in all, some 1,000 acres were handed over to the Meru.⁴³ Also, a number of other settler farms close to the mountain, some of them abandoned, had their leases revoked and they were subsequently handed over to the Meru in the 1950s and early 1960s.⁴⁴

Outmigration and settling on the plains

Partly as a result of the administration's adoption of the Wilson Report, partly due to the rapid expansion of coffee cultivation on the mountain, a wave of outmigration to the plains occurred in the 1950s and 1960s, pushing the land frontier there into dryer and more marginal lands to the east and south. While those evicted in the Meru Land Case refused the compensation in cash and land they were offered, leading coffee growers from West Meru moved into the designated areas in Kingori towards the latter half of the 1950s. Farmers from West Meru further expanded to the south and southeast, into lower Nduruma, Kikwe, Karangai, Mbuguni, Ongadong-

42 For a background, see TNA file 69/205/AR 7; 41-52 containing correspondence between Julian Focsaner, the Director of Tengeru Coffee Estate Ltd, and the District and Province Commissioners on the question of evicting 'squatters' from the estate.

43 Interviews: Yona Kimishua Akyoo and Jeremia Philipo Kitomari, Singisi village. See also TNA file 471/R.3/I, ADAR 1954.

44 This was, for example, the case for 3,000 acres in the Usa and Manyata areas made available in 1950. TNA file 605, *Land for future expansion of the tribes*, memo (dated 2 May 1950) to District Commissioner from K.H. McCleehs, Officer in Charge of the African Settlement Team dealing with settlement and land distribution in the Arusha and Moshi Districts following the adoption of the Wilson Report.

isho, Samaria and Maroroni, while those on the eastern side of the mountain moved into Maji ya Chai, Imbaseni, Kikatiti, Sakila, Leguruki and Ngare Nanyuki. Some settled there permanently, leaving their farms on the mountain to relatives. Others established seasonal homesteads on the plains, posting a wife or a son there to cultivate and leaving their cattle with relatives.

In Table 4.1, we can see how growth rates on the mountain markedly slowed down between 1957 and 1967 as a result of this short distance migration to the plains. On the plains, numbers rose dramatically in the late 1950s and 1960s, giving testimony to the rapid speed by which land was claimed in the expansion areas. There is, for example, a near tenfold increase of the population in the period between 1948 and 1967, an impressive growth even when one considers that part of this increase is due to the incorporation of the population on alienated lands in the census enumeration of 1967. In the period thereafter, growth rates slowed down but population still more than doubled between 1967 and 1988.

By 1970, nearly all land in these expansion areas had been claimed. Land was primarily used for seasonal cultivation of food crops and for grazing, but as the population has continued to rise also here, many farms have become permanently and intensively cultivated and cattle herds have declined in size, particularly in the areas lying close to the mountain and into which expansion occurred early. The present land frontier lies further to the south, in Kiteto District, and poses greater problems of transportation and resettlement than the areas claimed earlier. Expansion into this area is not officially sanctioned and lacks the intensity of the outmigration of the 1960s. The handful of Meru cultivating there do so on a seasonal basis and on a large scale. They belong to a small group of wealthy Meru farmers for whom expansion primarily is for commercial production purposes.

Throughout the colonial period conflicts over water mirrored those over land. On the mountain, the Meru had unlimited access to irrigation water. Settlers, on the other hand, raised demands for legislation in order for them to secure access to more water. In some expansion areas, e.g. Nduruma, Kikwe, Karangai, Mbuguni, the use of irrigation has improved crop yields per ha considerably but has also added to competition and conflict over water. As the population grows and claims for water for irrigation and domestic use are increasing everywhere, there is an urgent need for regulation and more

efficient use and allocation of the water coming from the mountain. The task is a formidable one, however, since the stakeholders involved for historical reasons articulate grossly diverging arguments in support of their claims.

Post-independence land policies

While laying firm the National Forest Reserve above 1,800 meters, the National government after independence, politically moving in the direction of socialism, was less strict in enforcing legislation regarding the cultivation of steep slopes with the result that most such areas are now under cultivation. Given the importance paid to land in the struggle for independence, and the cry for land among local farmers, it was in practice suicidal for local political leaders to enforce still valid by-laws regarding cultivation of steep hills. Moreover, during the first years after independence, the Meru (and the Arusha) continued to purchase revoked or abandoned settler estates, the administration now working in the interest of indigenous farmers and often with the new Meru District Council providing security for loans for such purchases. Little by little, the Meru gained access to settler lands. By 1965, the boundary between the Meru and settler estates were no longer a straight line, as it had been for most of the colonial period, but a rather jagged one (see Map 3.1).

However, although the 'iron ring' half a century after the Meru Land Case has been dented, it is still very much in effect. When the Nyerere Government after 1967 nationalised all land in Tanzania and abolished the freehold title in favour of leaseholds on a 99 years or 33 years basis, a number of European settlers left. Their property was, however, almost exclusively taken over by government institutes or parastatal companies and run by high-ranking bureaucrats or parastatal directors. The Madiira estate in Singisi, owned by a Greek settler, for example, was taken over by the government on behalf of the Horticultural Training Institute located in Tengeru. The neglect and poor management of this farm has ever since been a provocative element to farmers who just nearby struggle to make a living in extremely congested conditions. Since the early 1990s, a group of Singisi farmers are engaged in efforts to reclaim this under-utilised land of some 200 acres (Map 3.1).

The far-reaching villagisation campaigns launched by the Nyerere government in the 1970s by which millions of Tanzanians were resettled into Ujamaa villages, is testimony of the dedication the government paid to its socialist ideas. The mountain, however, was excluded from these huge operations on the basis that the dense settlement and the presence of perennial cash crops made such operations unfeasible and unnecessary.

More surprising is perhaps the fact that the settler farms were largely left untouched. As with the colonial powers preceding it, the independent government did not use this opportunity to intervene with a land reform that could have corrected the historically unjust distribution of land. Among the plausible reasons are the political influence exercised by the settler community and the new bureaucratic elite that emerged after independence and after the adoption of the Arusha declaration. Contributing was also the revenue that large commercial farms generated for the government. But perhaps equally important was the government's strong adherence to the idea that large-scale farming represented a superior form of land use than that of smallholders, a view that was typical of the post-independence era and in accordance with the prevailing modernisation paradigm, as we discussed in Chapter Two. This is probably the main reason why most of the revoked and nationalised estates came under various forms of state management rather than were handed over to smallholders, and why the government in the years after independence carved out large tracts of land in the south of the district for the establishment of parastatal sisal and sugar plantations.

Hence, the land issue continues to influence politics in the area. The presence nearby of under-utilised settler and state farms provoke smallholders with barely enough land to feed themselves and their families. In a desperate measure to argue their case, several hundred youths in 1995 invaded the 'abandoned' Arusha Coffee Estate west of Tengeru, only to be chased off by the police. The central government, since the mid-1980s having abandoned its socialist policies for the free market blessings, made it clear that all valid lease contracts must be obeyed by all parties. The government also argued, however, that it was in the interest of settlers to make sure that land was put to efficient use as not to risk popular discontent and cancellation of the lease contracts.

In a measure of calming down the local claims for land, the president since 1995, Mr Benjamin Mkapa, on tour in Arumeru District in October

1998 announced that land leases encompassing 15,000 acres were in the process of being cancelled on the grounds that the land was idle. Most of this land referred to sisal and sugar estates in the southern part of the district, but a few cases concerned land closer to the mountain. These included the 200 acres of the former Madiira Coffee Estate in Singisi, referred to above.⁴⁵



Photograph 4.1: Cultivation goes right up to the forest boundary at about 1800 m.

The 1990s and the future: customary tenure eroded?

Customary land tenure in Meru implies a strong sense of exclusiveness towards non-Meru. It has been, and still is, virtually impossible for outsiders to acquire land on the mountain, at least on the middle and upper slopes. Clan elders and most Meru emphatically defend their customary land rights, in principle, if not always in practice. Every transfer of land, whether

45 Daily News, October 7, 1998.

for sale or inheritance, must be sanctioned by clan and lineage elders. Equally central is the strong sense of social belonging and identity that links all Meru to the land since every male has a right to a piece of land for his family's subsistence.

However, with shortage of land, competition between users and land prices rocketing, elders' authority is being undermined. Their authority is largely dependent on their ability to grant land rights to young people and to unite villagers in excluding non-Meru from land purchases. Both tasks have become more difficult in recent years. This is particularly the case in the villages lying close to the main road and bordering the townships of Tengeru and Usa River, where in a number of cases clan members have been unable to offer payment at a level with that of external businessmen or investors. The latter obtain a formal title to the land, sometimes by bypassing or bribing clan elders or village authorities. This behaviour, which the elders refer to as selling land "*at night*" and "*through the power of money*"⁴⁶, is widely condemned among the Meru as a sign of moral decay but nevertheless appears to be on the increase, especially in West Meru.

The moves by the Tanzanian government in the 1990s in the direction of land privatisation and individual land titling are probably speeding up this development. Land privatisation was formally made into law by the passing of a new Land Act in February 1999 (Havnevik, 1999, 88).⁴⁷ With privatisation and land titling officially sanctioned, and with no special protection granted to holders under customary tenure, every Meru has the legal right to sell land to whomever he wants. With land pressure and land prices rising, customary tenure may prove too weak a basis for smallholders' continued rights to land in the future.

In a similar way, customary land rights are challenged from within society. Shortage of land has sharpened competition between heirs and between generations. Today, conflicts over land is the most common reason for interventions by local courts and clan elders.⁴⁸ While, from one point of view, competition over land has increased the status of traditional leaders as arbi-

46 The metaphor was used by clan elders when interviewed at their meeting at Mringaringa in January 1995.

47 The State and the President formally own all land in the country. Sale of land is therefore, in a formal sense, a sale of leasehold rights. A few Meru have registered their holdings in order to obtain a formal lease hold title.

48 Personal communication, Magistrate L.M. Karia, February 1997.

trators of conflicts, from another point of view, customary tenure appears incompatible with demands for land now raised from within society. Many daughters, for example, challenge their brothers by claiming rights to land. And within marriages, conflicts arise from the contradiction between norm and reality when the traditional division of labour cannot be sustained in a situation where the wife lacks land for subsistence. Indigenous institutions representing customary norms and moral values in relation to land allocation and gender issues are constantly challenged in this new situation. We will come back to this issue later when dealing with land and gender issues (Chapter Fifteen).

Summarising the period, we can see that land policies throughout the 20th century have been, if not outright discriminatory, at least hardly in support of smallholder agriculture. To this day, Meru smallholders remain confined to the central mountain slopes by an iron ring of large-scale farms, the existence of which continues to be a source of land conflict and social struggle. Strongly contributing to the present serious shortage of land, however, is the formidable growth of the Meru population itself.

Although the historical issue regarding the merits of large-scale and small-scale farming that we touched on in Chapter Two is brought into focus in the Arusha area, our main concern is with the developments within Meru society following commercialisation of the agrarian economy and the government policies accompanying it. And, above all, our concerns are the developments following the serious shortage of land that has emerged in the course of the past century. Following the latter, our next step is to look more closely at Meru population dynamics during the past century.

Long term population trends based on census data are necessarily approximate due to differences in methods and tracts of enumeration from one census to the next. Before independence, enumeration methods differed between the African and the non-African populations. While the early counts of African populations were estimates based on the number of registered male taxpayers multiplied by their average estimated number of dependants (a *de jure* estimation), non-Africans were enumerated on a *de facto* basis. The 1948 census was the first census with a *de facto* count of the African population (Johnston, 1980,1).

In addition, presentations of pre-independence census data made a distinction between 'native/tribal lands' and 'alienated lands'. Up to and including the 1957 census, figures in Table 4.1 refer to 'native lands' only. A limited number of Meru/Arusha were squatting within alienated areas and are therefore not listed in the table. In 1948, for example, they numbered 922 males and 174 females, the proportion between the Meru/Arusha being unknown

(TNA: File 69/316/IV, Memo from District Commissioner to Provincial Commissioner concerning the results of the 1948 census). Even so, the table probably gives a fairly accurate picture of the growth of the Meru 'tribe' up to and including 1957. However, as regards overall population totals in this part of the district, the table figures for this period represent a considerable under-estimation. This is because the Europeans/Asian populations, as well as the large group of African migrant workers living within 'alienated areas' are not listed in the table. Their numbers are available as district totals only and fluctuate from census to census, probably because of the problems involved in counting and recording for tax purposes the African labour population residing on the estates. Recorded numbers vary from about 11,300 people (1931) to 3,500 (1948) and 11,676 (1957), the African population in Atusha town being excluded. Table 4.2 corrects for this bias by including all ethnic groups in the figures up to and including 1957.

African migrants residing within Meru tribal lands constitute another 'census problem'. This population was negligible in the beginning but as 'tribal lands' expanded by the Meru gaining access to settler estates in the 1950s, its size increased. As a consequence of the inclusion in the census count of non-Meru Africans from these new areas in 1957 and 1967, population growth rates were inflated within tribal lands. The District Commissioner noted, for example, that in 1957 there were 5,200 non-Meru Africans residing within Meru chiefdom (TNA, 471/R.3/I; ADAR, dated 28 January, 1958). These are included in the 1957 figure given in Table 4.1.

As long as our concern is the size and growth of the Meru population, the exclusion from table of the population residing on alienated lands is not a big problem, at least until 1957. After independence, however, interpretation of Meru population trends becomes more difficult still. This is due to the abandonment of ethnic registration and the introduction of new administrative units, i.e. villages and wards. After independence, former Meru locations on the lower mountain slopes were administratively amalgamated with the nearby settler estates and their respective populations recorded jointly in the subsequent censuses. In addition, from independence onwards some areas evolved into townships with a large non-Meru population. As a result of these developments, population figures in the 1967 census and onwards for Akheri, Poli and Nkoaranga Wards, especially, are further inflated compared to 1957. A similar effect can be seen in the expansion areas, which now include a recording of people from both former native and alienated lands. On the southern plains, especially, people of non-Meru origin may constitute as much as 30 or 40 per cent of the total population.

Population dynamics in Meru and growth of Arusha town

Introduction

In this Chapter we will outline in a summarised fashion some of the essential demographic dynamics accounting for the formidable growth in population that has taken place in Meru, as well as in the district as a whole, during the past century. We will in turn discuss the impact of falling mortality, of sustained high fertility and of migration flows. Also, the growth of Arusha town will be outlined on the basis of its crucial role for Meru livelihoods. The overall result of the demographic trends described is a severe land shortage on the mountain. The chapter ends with an illustration of this problem through an assessment of population densities on arable land.

Mortality trends

We have already mentioned the probable decline in mortality that followed from the more stable political situation that developed in the 1920s and from the modest improvements in health and nutrition standards that were accomplished during this time. More generally, the mountain with its cool climate has provided a much healthier environment than the surrounding plains, which are hot, malaria stricken and facing recurrent droughts. For most years, the fertile and well-watered soils on the mountain have yielded a surplus of food, and the concentrated and dense population has made investments in social and physical infrastructure feasible, which in turn has affected living standards positively.

In Moshi District, where the physical and infrastructure conditions are similar to those in Arumeru, the 1948 census revealed that child survival increased with altitude. While the ratio of recorded children to women at 2,000 feet was 1:1, it was 2:1 at 6,000 feet.⁴⁹ Throughout the period covered, mortality levels in Arusha/Arumeru District have been consistently lower than in any other district in Tanzania with the possible exception of Moshi District. The crude death rate (CDR) for Arusha District in 1948 was estimated to 20 per thousand.⁵⁰

The 1950s and the 1960s saw a radical social development in Meru. As a result of coffee cultivation household incomes increased. Schools and dispensaries were built and campaigns launched for the construction of pit latrines, measures that improved health standards. Following the Ngare Nanyuki evictions, the colonial government had set aside about £46,000 as a Meru development fund intended for the new settlement areas into which those evicted were offered new land. The Meru native authority, however, redirected most of these funds for social development to the mountain itself, and they added their own means through a regular taxation of coffee incomes.⁵¹ As a result, living standards increased steadily and mortality levels came down.

The 1967 census reported the CDR for Tanzania Mainland to be 21-23 deaths per thousand persons, while Arusha Region recorded a CDR of 14 and Arusha District 11. For the district, the 1967 figure was nearly half of that recorded in 1948, by all means an impressive achievement even if we consider the possibility of underreporting of deaths and sampling errors. Also at regional level, the 1967 recordings were down from the 1957 figures of a CDR of 18-19. During the same period, 1957-67, infant mortality rate (IMR)⁵² for Arusha Region had come down from 140-150 to 93 per thousand live births. Although, still high by international comparison, the re-

49 TNA file 69/380/4. The information was based on a sample survey attached to the 1948 census that covered about 10 per cent of counted households in certain randomly selected enumeration areas. The child/woman ratio referred to children 0-15 years of age per woman 16 years and above. The information was originally published in a document labelled *Geographical and Tribal Studies of the African Population of Tanganyika 1950*, but no details of this document or the sample survey could be traced in the archives.

50 TNA file 69/380/4.

51 ADAR for the 1950s in TNA files series 63/AR/20 and 471/R.3/I. See also files series 9 (NA/4) and 472 (36/1 and EDU/43/B) on education and social development.

52 This refers to deaths of children below one year of age.

gional and district estimates for Arusha were considerably lower than elsewhere in Tanzania. Life expectancy in Arusha Region in 1967, for example, was 53 years compared to 41-43 years for Tanzania Mainland as a whole. The 1973 National Demographic Survey confirmed these differences in mortality levels and trends (figures in Johnston, 1980, 21-2).

The 1978 census reported CDR for Arumeru District to be 12 deaths per thousand, still considerably below regional or country levels due to the better health and medical services in the district. Johnston considered the situation in 1978 as good as that in 1967, the lower CDR for 1967 being a probable underreporting of deaths (Johnston, 1983, 13). Mlay suggested that signs of economic recession in the late 1970s were breaking the long-term trend of falling mortality. Recent food shortages in parts of the district, the increase in the cost of living, scarcity of drugs in hospitals and dispensaries etc. were seen to prevent the improvement in living conditions that were deemed necessary in order to bring mortality down further (Mlay, 1982, 9). The 1988 census, however, suggested that mortality continued to decline, or at least levelled out, in spite of the economic crisis. Data indicated a CDR of 10.5 per thousand population in rural areas of Arusha Region (United Republic of Tanzania, 1991, Table 1, 4; 1994, Table 11, 228).⁵³

The 1978 census provided no information of infant and child (under-five) mortality at district level. The 'detailed questionnaire' of the 1988 national census, however, yielded such information. For Arumeru District, infant and under-five mortality levels were the lowest in Tanzania with the exception of Ngorongoro District (also in Arusha Region). In Arumeru District IMR was 59 and U5MR⁵⁴ was 90 deaths per thousand live births. Corresponding figures for Ngorongoro District were 46 and 68. Arumeru District records were better than those of Arusha town (66 and 103, respectively) and considerably better than the country average (88 and 145 respectively). At the regional level, 1985 recordings represented a marked improvement from 1975 with IMR having declined from 108 to 75 and U5MR from 179 to 119 in spite of the encroaching economic crisis (all in United Republic of Tanzania, nd).

What has happened during the last decade in terms of mortality trends is uncertain. The onset of the AIDS pandemic has affected overall mortality

53 No CDR data from 1988 for Arumeru District could be traced.

54 Under 5 (years of age) Mortality Rate

levels negatively and decreased life expectancies in most sub-Saharan African countries. Most certainly, mortality levels in Meru are affected as well. In addition, the economic crisis and the associated erosion of state-supplied social services and health facilities may have some impact. However, while the general critique of Structural Adjustment Programme (SAP) is that the programme has worsened access to health services, the truth of this argument is less clear in Meru.

What seems to have taken place in the 1990s is an upsurge in the number of private and NGO dispensaries offering low cost consultations to the public as well as a modest upgrading of the government hospital in Patandi/Tengeru. And throughout the years of crisis, the Lutheran Church (ELCT) continued their services in local hospitals and dispensaries. In view of these observations, the major threat to a continued decline of mortality levels seems to be the AIDS pandemic, the effects of which we still lack hard data to assess.

Fertility

Matching the relatively low mortality in Meru has been a consistently high level of fertility. The combined effect of these two factors, low mortality and high fertility, has been a high rate of natural population increase.

Fertility levels in Arusha/Arumeru District have throughout the period for which we have records been higher than the country average. Most likely, fertility increased as a result of the healthy mountain environment, the better food supply and the achievements that were made in social development towards the end of colonial rule and thereafter. In 1948, for example, crude birth rate (CBR) was estimated to 40 births per thousand people and year in Arusha District, the information deriving from the census sample survey of that year.⁵⁵

Estimations of CBR were made also on the basis of 1967 census and the National Demographic Survey of 1973, but are, according to Johnston, not fully reliable, a note that probably applies to the 1948 sample survey as well (Johnston, 1980,19). The regional estimate of CBR, based on the 1967 cen-

55 TNA file 69/380/4 *Population Statistics, 1948 census.*

sus, was 47 births (per 1,000 population), and the Total Fertility Rate (TFR) was estimated to 6.6 children per woman. For the 1978 census, the computed CBR for Arumeru District was 50, suggesting an increase from previous levels (Johnston, 1983, 13). This implied an annual rate of natural increase (CBR – CDR) in the district of 3.8 per cent, which unless moderated by outmigration meant a doubling of the population in less than 20 years.

It is plausible that fertility increased after 1950 following improvements in health standards and more effective medical treatment of childlessness and infecundity. Fertility is also likely to have increased from the effects of modernisation causing erosion of traditional norms of child spacing and of sexual abstinence following childbirth. The decline of polygyny after independence may also have contributed to this development. The author's survey from 1995/96 revealed an increase in fertility, measured as lifetime fertility, after independence in those Meru villages where social and cultural change had been most rapid (Larsson, 1997).

There are both cultural/ideational and materialistic/economic reasons for a sustained high fertility in Meru. Unfortunately, space does not permit a discussion of these reasons here.⁵⁶ We may conclude, however, that there are now signs of a fertility decline in the area. Although still modest in pace, one can expect the decline to accelerate in the coming years given the shortage of land and the reorientation of livelihoods. As it is, Meru women have experienced a rather modest fertility decline over the twenty-year period preceding 1995/96. On average, child bearing (measured as the average number of children born per woman) has dropped marginally or about 0.5 child per woman for the age groups 25 years and above (Table 5.1). This is less than the estimated decline for the region and for Tanzania as a whole. For Arusha Region, CBR dropped from 47 to 40 between 1978 and 1988 (Johnston, 1983, 11; United Republic of Tanzania, 1991, Table 1, 4; 1994, Table 1, 5). According to more recent data from Demographic Health Surveys (DHS), Total Fertility Rate (TFR) for Tanzania dropped from 6.3 to 5.8 between 1991/92 and 1996.⁵⁷

56 See Egerö and Larsson (1999) and Larsson (1997; 1999).

57 DHS homepage at www.macroid.com/dhs/ftp/ftphome.html.

Table 1.5: *Average number of live births per woman and age group in Meru 1975 – 1995*⁵⁸

Women age group	1975	1985	1995
15-19	<0.1	<0.1	<0.1
20-24	0.8	0.7	0.7
25-29	2.5	2.5	2.0
30-34	3.8	3.6	3.4
35-39	5.5	5.6	5.1
40-44	6.5	6.4	5.8
45-49	6.9*	7.4	6.8

* based on women who are now 65 years of age or older.

Interviews we conducted with Meru men and women suggest that as high fertility levels now slowly begin to come down, they do so foremost but not exclusively on the basis of material (cost of living) concerns. Shortage of land and aspirations of material improvements that require off-farm incomes are by many couples deemed incompatible with a large number of children. According to our analysis based on statistical data and interviews, the increased incidence of non-marriage and divorce among Meru women, delayed age of marriage, improved female education, and the combination of land shortage/off-farm incomes seem to be the main factors accounting for the observed decline in fertility. What seems to be a major difference from before is the perception by many young males that a large number of children represent a trade-off in terms of wellbeing and living standards (Egerö and Larsson, 1999; Larsson, 1999).

The overall conclusion is that the built in momentum of population growth based on past (and still) high levels of fertility will lead to continued population increase in Meru and in the district for many years to come, even if a radical fertility decline would take place within the next very few years. The pace of this process, however, is not only dependent on mortality and fertility trends but also on migration flows, which may reduce or augment the effects of natural population growth.

Migration and urbanisation

Until quite recently, Arusha/Arumeru District has been one of net immigration. During the colonial period, the German and British administration

58 Source: Egerö and Larsson (1999) and Larsson (1999).

encouraged and institutionalised labour migration into the district's settler estates and plantations from the central and sparsely populated parts of Tanzania. By 1967, 19 per cent of the population in Arusha District originated from outside Arusha Region (coming mainly from Singida, Dodoma and Kilimanjaro Regions) (Egerö, 1974, Table 6, 46).⁵⁹

Moreover, before independence most of the migrants were males responding to the insatiable demand for labour on the estates and plantations. As a consequence, Arusha District had a considerable male surplus, or a high sex (male/female) ratio. In 1967, for example, this ratio was 196 men per 100 women for the age-group 20-39 years (Egerö, 1974, Table 6, 46).

In the decade between the 1957 and 1967 censuses, the colonial pattern of migration began to change from being almost exclusively a seasonal migration by males to include the movement of whole families on a permanent basis. As a result, while males continued to dominate migration flows also after independence, the skewed sex ratio that so far had characterised the district adult population became gradually less pronounced. For example, between 1948 and 1978, the sex ratio of the district declined from 149 to 101 (East African Statistical Department, 1953a, 45; Johnston, 1983, Table 4, 7).

As to the local situation, the population censuses of 1948 and onwards show a slight surplus of females over males in the age groups above 15 years of age, indicating that Meru men to some extent regularly have migrated in search for jobs outside the mountain. The sex ratio is most skewed in the age groups 15-34 years. This is when young men temporarily leave the mountain, searching for jobs and accumulating wealth before returning for marriage. Some of this temporary or circular migration is directed towards Arush town.⁶⁰

59 According to the 1928 census estimates, 'alien natives' numbered 4,813 or about 12 per cent of the population in the district (TNA file 69/380/1, *1928 Population Census*). In 1948, they counted 31,094 or about 29 per cent of the district population (East African Statistical Department, 1953a, 45).

60 For the adult population (>15 years of age), the sex ratios calculated from the censuses of 1948, 1978 and 1988 were 78, 98, and 94, respectively. For the age groups 15-34 years, the sex ratios were 90 (1978) and 89 (1988). Sources: 1948: TNA file 69/316/IV; 1978: United Republic of Tanzania (1981, 47-8); 1988: United Republic of Tanzania (1991, 419-22).

In order to understand population developments and livelihoods in Meru area, we therefore need to take a closer look at the growth of Arusha town, situated like an enclave within Arumeru District (formerly Arusha District). Population, annual growth rates and sex ratios for Arusha town for the period 1931 to 1988 are given in Table 5.2.

As can be seen in the table, up to 1948, Arusha town grew relatively slowly, as did other towns in Tanzania. During this time migration was heavily regulated by the colonial administration and rural to urban migration accounted for hardly more than one per cent of the urban growth rate in the country (Egerö, 1974; Johnston, 1980, 24). During the period 1957-67, however, Arusha experienced the highest urban growth rate in Tanzania with the result that in 1967, 57 per cent of the population in Arusha originated from outside the region (Johnston, 1980, 26; United Republic of Tanzania, 1969,267).⁶¹

Although still rapid, urban growth slowed down in the subsequent period but increased again in the 1980s as Table 5.2 indicates. Unfortunately, there is no reliable and comprehensive information about developments in the 1990s. A projection based on the growth rate recorded in the 1978-88 period (6.5 %), suggests that Arusha town by 1995 had about 150,000 inhabitants and by the year 2000 should reach some 207,000. This may well be an underestimation given the economic crisis and the SAP, which are likely to have triggered rural to urban migration from sparsely populated and, when it comes to social service, less well endowed areas. Obvious to the regular visitor to Arusha is the enormous urban sprawl occurring. Townships are expanding in all directions, including into the mountain villages north of the town centre.

61 Growth rates in the table slightly divert from those presented in Johnston (1980, Table 1).

Table 5.2: *Arusha town 1931-1988, and mean annual growth rates (per cent) between censuses*⁶²

	1931	1948	1957	1967	1978	1988	2000
Total population*	-	5,300	10,000	32,452	55,223	100,907	207,000
African population	1,681	2,946	5,161	-	-	-	-
Annual growth rate	-	-	7.8	13.9	5.1	6.5	6.5
Sex ratio (adults)		327	266	132	122	117	-

* Figures for 1948 and 1957 are rounded. Figures for 2000 is a projection based on the 1978-88 growth rate.

Table 4.1 (previous Chapter) suggests that most population growth in Meru actually was absorbed on the mountain until the late 1950s and 1960s when the general adoption of coffee cultivation and the opening up of new areas on the plains triggered a wave of outmigration. Thereafter, population growth has resumed on the mountain itself, however, at a somewhat lower pace than before. Between 1978 and 1988, the annual population growth rate in Meru was lower than in the preceding period. Given the high and only moderately adjusted level of fertility, this suggests that outmigration may have increased in the last decades.

This outmigration may take different forms and directions. We saw in the previous chapter how the rapid settlement of the plains led to a radical decline of population growth rates on the mountain in the 1960s. Outmigration to the plains still occurs but has a less dramatic impact on population growth rates and distribution. It takes place in the form of a constant trickling of people from the mountain into the lowlands of the district (Mlay, 1981). A father often divides his property among the sons so that some of them get land on the mountain while others receive larger portions on the plains. Others exchange land by selling their small plots on the mountain in order to buy a larger piece on the plains.

There is also migration out of the district, stemming both from the mountain and the plains. Based on 1978 census data, Mlay, and Johnston, concluded that Arumeru District experienced an annual rate of net outmi-

62 Sources: **1931:** TNA file 69/380/3 *Native Census 1931*; **1948:** East African Statistical Department (1953a,45); Johnston (1983, Table 1); **1957:** East African Statistical Department (1958); Johnston (1983, Table 1); **1967:** United Republic of Tanzania (1969,267); **1978:** United Republic of Tanzania (1981, in Johnston, 1983, Table 1 and 4); **1988:** United Republic of Tanzania (1991, Table 1, 10).

gration of 0.5 per cent, and a regional survey in 1979/80 suggested it could be as high as 1.3 per cent (Johnston, 1983,13; Mlay, 1981,3).

Given the land pressure in the district, one would perhaps have expected net outmigration to be larger. However, Arumeru District also attracts a large number of immigrants seeking employment in Arusha and living within commuter distance to the town. This is one reason for the formidable expansion of townships such as Usa River and Tengeru and of other minor settlements along the Arusha-Moshi road during the last decades. It is also seen in the form of lodging facilities being built by farmers residing in villages near the townships and which constitute a new avenue of income for them. The tenants in these townships and villages are to a great extent migrant workers commuting to Arusha for jobs.

Survey data on migration

To what extent is Arusha town a recipient of permanent migration from Meru and Arumeru District? In the survey made by the author in Meru in 1995/96, data on the whereabouts of grown-up children and of absent household members were collected. In 362 of the 753 households interviewed, a number of grown up sons and daughters (18 years of age or above) had left their parental home and were living elsewhere. Although this subsample of 1,262 individuals is not a probability sample drawn from a population of outmigrated individuals, it may nevertheless give a rough indication of the pattern of outmigration from Meru mountain villages. The sample revealed that outmigration is occurring to destinations both within the district as well as outside. As can be seen in Table 5.3, most sons (57 %) had remained within their parental village on land they had inherited from their father. Some 15 per cent moved out of their home village to other places in the coffee belt or elsewhere in the District, in most cases in order to settle on land they had inherited or acquired in these places. However, nearly 28 per cent had settled outside Arumeru, representing a type of outmigration that often goes to urban areas, including Arusha town and Dar es Salaam.

Given the exogamous pattern of marriage in Meru, the finding that most daughters leave their home village is expected. Daughters move either to new homes within their own village (41 %) or to adjacent villages in the cof-

fee-belt or on the plains (37 %). A substantial number (22 %), however, move out of the district, either in order to marry or in search of employment or business opportunities. In 84 per cent of the cases, the reason for daughters' movement from home is marriage.

Table 5.3: *Destination of permanent movements from parental home. Sons and daughters of sampled households. Distribution in per cent.*

	Remain within village	Outside village but on the mountain	Elsewhere within Arumeru	Arusha town	Dar es Salaam	Elsewhere outside Arumeru	Total
Sons	57.4	4.2	10.7	4.8	9.0	14.0	100.0
Daughters	41.0	17.7	19.6	5.6	4.0	12.2	100.0
Total	47.2	12.0	16.4	5.0	6.3	13.0	100.0

Total valid cases 1,262. Missing 35. Total male, 561. Total female, 701.

As regards temporary absence from home, the survey sample consisting of 2,005 household members of 18 years and above confirms the trends outlined above. The number of absentees tends to vary across seasons. The number of absentees recorded (152 absentees or 7.5 %) in the survey is relatively low and is partly explained by the fact that most household members from the mountain commute both to jobs in Arusha town and to their plots on the plains. Unfortunately, we have only data about the place of temporary residence for those persons whose absence was due to earning cash income. Among them, all in all 110 persons, nearly two thirds went outside the district for a period not exceeding 12 months. In only 26 cases was the absentee also the household head (all males), their absence most often being caused by employment or business activities (79 %). Arusha town and Dar es Salaam constitute important places of residence both for temporary absentees, as well as for those who leave the mountain on a more permanent basis.

Immigration to Meru is trickier to estimate. Of the sons referred to in Table 5.3, the majority hold land or expect to inherit land in the village, implying that they will return to Meru at some stage, for instance when they marry or retire. With the exception for the immediate vicinity of Tengeru and Usa River townships, immigration by non-Meru individuals to Meru villages is insignificant. Out of 604 interviewed male household heads, only

13 were born outside the district.⁶³ This gives testimony to the ethnic homogeneity of the surveyed villages, and the difficulty for outsiders to acquire land (and permanent residence) within the coffee-banana belt. Most immigrants to Meru reside in the townships of Tengeru or Usa River, or get accommodation in 'lodges' built by farmers in villages close to these townships. A census of such lodges and their tenants in Singisi village in 1997 revealed that they hosted 84 household heads⁶⁴, of which 58 originated from outside Meru.

In the absence of more recent census data, we can only extrapolate trends roughly discernible in the 1978 and 1988 censuses and which to some extent also can be observed in the author's survey. From the congested environment in the coffee-belt, there is a constant trickling of people out to the plains on land cleared by their parents. In addition, there is a substantial and possibly increasing migration out of the district by Meru and other people primarily looking for employment and business opportunities in urban surroundings (Table 5.3). Since many migrants hold or will inherit land on the mountain, this outmigration is likely to be countered by immigration, the extent of which we have no records.

The retrospective census data suggest a continued growth for Arusha town as income opportunities there attract people both from far away and from adjacent Arumeru District and the coffee-banana belt. Some of the distant migrants seeking jobs in Arusha, however, settle within commuting distance in Arumeru District. Typical of the migration into the district is that it is not for farming but for wage employment. It gravitates primarily towards Arusha town but is to some extent also directed to Tengeru and Usa River townships, as well as to the mining area of Mererani and Semanjiro in the south of the district.

Extrapolation of 1988 population growth rates of 2.1 per cent on the mountain and 2.4 on the plains since the 1988 census (see Table 1.4), suggests that the population on the mountain at present (2001) should be around or exceed 80,000 people and on the plains 100,000. With due consideration taken to the mixture of ethnic groups in these areas, the mountain part of the Meru population may have increased perhaps eightfold since the

63 These were 'temporary' and landless tenants in Singisi.

64 Totally 222 people were living in lodges. The figure 84 refers to the individuals who were defined as household heads (i.e. the eldest lodge dweller).

German encounter. When we add to this figure the Meru residing on the plains, the present Meru population may be 12-15 times the size it was at the beginning of the 20th century. By all means, this is a formidable growth, representing an enormous force of social and economic change in this part of Africa. And in terms of per capita availability of land, changes have been dramatic.

Land pressures

One way of comprehending the land pressures resulting from such a population growth is through illustration of population densities on arable land. This is easier said than done, however, since the administrative units to which population data can be linked tend to change constantly and cause problems of the kind we discussed in relation to the interpretation of survey data (see note at the end of the previous Chapter). By involving local people in drawing subvillage maps from air photographs and relating the maps to our household censuses, we managed to produce a number of highly localised and up to date estimations of population densities in different parts of the coffee-banana belt (Table 5.4).⁶⁵

We excluded the estates and the mountain Forest Reserve when drawing sub-village boundaries in order to have the figures in the table refer to the areas actually inhabited by Meru smallholders. The table verifies the extreme congestion in Singisi village where densities approach and even exceed 2,000 people/km². Generally in West Meru, population densities exceed 1,000 people/km². This was historically the core area of the Meru from where they expanded eastwards on the mountain as population increased. The lowest population densities are therefore found in the eastern subvillages, such as Kirima and Nkoanekoli. Also Kyuta belongs here. Expansion into these areas began in the 1920s and 1930s.

Although, the surveyed area covers less than two per cent of the total surface of the district, it holds about 12 per cent of its estimated population (1995). The average density in the study area is about 950 persons/km². This represents less than 0.6 ha per household or about one acre and a quar-

⁶⁵ We used air photographs from 1972 and 1980, series GS 1-8 and GS 1-51, obtained at the Bureau of Survey and Mapping in Dar es Salaam.

ter. Given that some land is for public use or unsuitable for other reasons, real access to land per household is less, perhaps one acre at the most. The variation between villages is also great. Available land in Singisi is about 0.3 ha per household or about $\frac{3}{4}$ of an acre. When deducting land for public use etc., real availability of land per household may be as small as half an acre on average, holdings on the plains excluded (Table 5.4).

Table 5.4: *Population densities and available land (ha) per household in surveyed sub-villages, coffee-banana belt*

Subvillage	Area (km ²)	No of hh	Mean estimated hh size	Population	Population density (people/km ²)	Ha per hh
Mavinuni	.8	263	5.3	1,383	1,729	0.30
Maringa	.5	179	5.4	959	2,086	0.26
Nsitoni	1.0	305	5.1	1,552	1,617	0.33
Kyaraa	.8	212	5.9	1,253	1,492	0.38
Nkoambiaa*	-	98	4.8	472	-	-
Poli Njoro	.9	189	5.6	1,053	1,183	0.48
Kirima	1.5	134	5.9	785	534	1.12
Mura wa Iwen	1.0	157	5.4	854	880	0.64
Ndoombo Kati	.6	160	4.5	718	1,159	0.38
Kyuta*	-	62	5.8	360	-	-
Nkoanekoli	2.4	102	5.7	581	246	2.35
Seela Kati	1.3	244	5.1	1,254	1,003	0.53
<i>Sampled subvillages</i>	<i>10.7</i>	<i>1,933</i>	<i>5.3</i>	<i>10,281</i>	<i>964</i>	<i>0.55</i>
<i>Survey sample frame</i>	<i>48.7</i>	<i>8,705</i>	<i>5.3</i>	<i>46,193</i>	<i>949</i>	<i>0.56</i>

*We failed to draw accurate maps of Nkoambiaa and Kyuta subvillages. The column summaries and averages exclude the values for these two subvillages.

For a long period, the Meru responded to land shortage by intensifying agriculture and producing for the market, a process we will look into in the next chapter. In the face of a much larger and still increasing population today, the agriculture path to improved conditions of living for the broad populace is limited. Large numbers of farmers and landless youths are turning to off-farm alternatives of livelihood. Few consider seriously the option of migrating to the southern part of the district or to other parts of Tanzania in order to take up land there. With land unavailable nearby, off-farm pur-

suits constitute more attractive income alternatives for the youth than farming in a dry and hot place far from home.

Note:

Spear (1997, 129ff) estimated population densities and population thresholds in various parts of the mountain and linked them to patterns of agricultural expansion and intensification. While the overall sequence of events presented this way seems quite convincing, we must be careful not to put too much emphasis on the accuracy of figures derived by this method. The surface areas used by Spear derive from Mlay (1982) and refer to ward boundaries valid at the time for the 1978 census. Ward boundaries, however, include uninhabited lands such as forest reserves and national parks. Moreover, wards tend to stretch over several agro-ecological zones and are therefore not a very useful basis for the assessment of local population density thresholds. For this reason, both Spear and Mlay tend to underestimate actual population densities and thresholds in the coffee-banana belt.

Further illustration of the difficulty of area estimations is apparent in Johnston (1983, 30-1) who also relies on Mlay's figures. When added up, both ward and divisional surface areas arrive at roughly the same total for the district as a whole, about 2,960 km². However, area estimates for individual wards when added up do not correspond to the figures given for individual divisions. While Mlay's ward areas were calculated from census enumeration maps, divisional areas presented in Johnston (1983, 30-1) derive from the district Annual Plan of 1983/84. For Poli Division, for example, the latter source indicated a size of 195 km², while the enumeration maps gave a total size of 397 km², more than the double (!).

Not even at village level, do official maps from different sources correlate. For Singisi village, for example, properly surveyed by the Lands Department, the official maps at the regional office in Arusha did not tally with those kept at the central office at Nyumbaya Ardhi in Dar es Salaam, nor with the 1988 census enumeration area maps. Neither of the three tallied with the village leaders' opinions of the village borders. Any attempt of assessing trends of population densities will have to relate not only to the fact that administrative borders have changed over time, but also to the fact that current area estimates may differ substantially depending on what kind of maps or references are being used.

PART II

Responding to land
scarcity and market
demand: intensifying
agriculture and
diversifying incomes

Population and market interrelationships

Introduction

In Chapter Two we argued that the classical peasant conception for several reasons offers a largely inadequate explanatory ground for agricultural and social change. One reason is its virtual neglect of demographic factors in agrarian change. In Meru, for example, population growth has fundamentally altered the conditions for agriculture-based livelihoods, most obviously by drastically reducing the per capita availability of land.

Our position is that both market and demographic factors need to be taken into account in order to understand agricultural intensification in smallholder farming in developing countries, and in Africa in particular. As Netting noted, “...*a unicausal model of smallholder intensive household farming systems that neglects either population pressure or market demands is inadequate to account for the prevalence of the type.*” (Netting 1993,15). Even so, the above statement is incomplete since the outcome of population pressure and market demand is mediated by institutional and other conditions that to a large extent are shaped by the state and other forces external to local society.

By discussing in this chapter what we believe are the most important driving forces and conditions of agrarian change in Africa today, we intend to set the stage for an understanding of the Meru situation. This includes reflecting on the role of state policy and institutional change in relation to population and market driven agricultural intensification. Our point of departure is the somewhat contradictory ‘message’ entailed in population growth. On one side are Boserupian optimists who see population growth as a positive driving force and condition of agricultural development. On

the other side are the pessimistic concerns of the neo-Malthusians claiming that current high rates of population growth eats away investments intended to raise per capita productivity and sets in motion a downward spiral of agricultural involution and environmental degradation.

Of particular concern are current shifts in livelihoods towards off-farm incomes (economic diversification), which appear both to catalyse productivity increases in agriculture and, where an extreme fragmentation of land holdings takes place and conditions for commercial farming remain uncertain, to replace agriculture as a means of livelihood. It is also of interest to examine how population pressure and land scarcity relate to trends of economic polarisation and social mobility stemming from increased participation by households in the market economy. This issue will be dealt with in Chapter Thirteen and onwards.

The main concern in the current debate about the role of population in African rural development is that of rapid population growth. This is hardly surprising in view of the fact that the balance between demand and supply factors in agriculture is highly influenced by changes in human numbers. With Total Fertility Rates (TFR) around six children per woman and annual population growth rates around three per cent, which have been commonplace for several decades in sub-Saharan Africa, a population will double in a twenty-year period. Furthermore, the age distribution of that population will be biased towards large young cohorts (about half of the population will be below 15 years of age).

Even if fertility suddenly would go down to replacement level (two children per woman), the large number of young people entering reproductive age in the years ahead would ensure a continued growth of population also after this event. This is on the assumption of constant or decreasing mortality rates, which in the era of the AIDS pandemic has proved to be a somewhat loose ground for population forecasts.

Apart from but associated with the growth rate, the size and density of a population will affect conditions of agricultural growth, for example by providing a basis for viable markets and infrastructure investment. Regional differences in the density and structure of the population may therefore contribute to unequal levels and paces of development in different areas. Migration flows may aggravate or reduce such differences. According to Gleave (1992,239-40), there are two kinds of rural to rural migration. One

goes from periphery areas of low population density or production potential into core areas that are densely populated and have high levels of socio-economic development. Another goes in the opposite direction and represents a quest for new land for farming. Migration may also cause the sex ratio in populations from different geographical areas to be skewed. In so far as the work of men and women is not interchangeable but follows socially and culturally defined gender roles, skewed sex ratios due to migration may cause development trade-offs. Where the local institutional and economic context permits the productive use of incomes from migration, however, this may have positive effects on the local rural economy, as demonstrated by Tiffen et al (1994) in the case of Machakos District in Kenya.

In the following overview, we will concentrate primarily on the growth rate and density aspects of population dynamics and connect to the other characteristics where applicable. A detailed presentation of population characteristics of Northern Tanzania and Meru was given in Chapter Four and Five.

Population induced intensification

The most thorough theoretical framework dealing with the effects of population growth on agricultural development is that of Ester Boserup (1965). In Boserup's interpretation, intensification is foremost understood as 'frequency of cropping'. In long fallow systems, a particular piece of land may be cultivated perhaps as rarely as once in a twenty-year period, while in the most intensive systems of permanent cultivation (irrigation systems), several crops may be reaped annually. Her thesis on population driven agricultural growth is well known and is here only presented in a summarised fashion.

When due to population growth, land becomes scarce for the continuation of the long-fallow type of agriculture, fallow periods will be shortened and frequency of cropping will increase per area unit. With a given set of technology, increasing production through more frequent cropping is accompanied by a decreasing productivity of labour (more labour is required for weeding, fertilisation, fencing, maintaining irrigation systems etc. in order to produce the same amount of food per capita as before but on a smaller piece of land). According to Boserup, the added labour required in more in-

tensive cultivation systems is the reason why intensification does not take place until the food needs of a growing population makes it necessary.

Boserup's thesis is largely seen as a response to the earlier dominant view forwarded by Thomas Malthus in the late 18th century that in the longer term, a continued growth in human numbers would inevitably outpace any possible increase in food supply (Bilsborrow and Geores, 1994,175ff).

Malthus' reasoning is consistent with that of Boserup as to the argument that productivity of labour decreases as the frequency of cropping increases. Where the two profoundly differ is on the role of technology. Technological change is a critical factor in Boserup's model and, essentially, the basis for the development optimism that is derived from it. At certain points in time, technological innovations will improve the declining productivity of labour that results from increasing frequency of cropping. One such example is when draft animals and ploughs replace hoe cultivation. While Malthus saw technical change as random or accidental, Boserup saw it as the logical outcome of scarcity conditions to which humans responded with new technologies (and with more efficient farming practices, ways of labour organisation and institutions), raising productivity of both land and labour and hence overcoming the 'Malthusian' or 'demographic trap'. According to Boserup, the capacity of the land to provide food for a population is not fixed but flexible and dependent on human ingenuity. In subsistence oriented societies where the incentives of surplus production stemming from market demand are lacking, scarcity conditions and 'unsustainable' resource use invoked by population growth is hence a precondition for agricultural development.

In a market context, Boserup's thesis of population induced technology change goes along with the 'Induced Innovation' thesis raised by (Hayami and Ruttan, 1971), according to which changes in the relative prices for land and labour, induced by for example population growth or a market demand for crops, lead to a more intensive use and conservation of a scarce resource (e.g. land) through an increased use of a plentiful resource (e.g. labour). The Induced Innovation model operates through the market mechanism as factor prices for farm inputs change in relation to that for land and labour, leading to a local demand for new technologies (Boserup, 1965; Hayami and Ruttan, 1971). While the demand for technology is endogenously generated, it is external agents who respond to it.

Land availability, expansion of cultivation and migration.

Expanding the land under cultivation and migrating in search for new land (or other income sources) have partly for labour saving reasons been common responses to local population growth and served as alternatives to intensification throughout history, much in the way stipulated by Boserup. Large parts of Africa can still be characterised as having an 'open frontier'. Expanding the area under cultivation is therefore a common way of increasing agricultural output in Africa (Achebe et al, 1990; Paulino, 1987). For example, between 1975 and 1995, two thirds of the increase in maize production in Africa derived from expanding the land under cultivation (Byerlee and Eicher, 1997, 18). Areas that are most favourable for cultivation (i.e. require the least initial effort in terms of labour and where returns to hectare are highest) will be cleared first. (Boserup, 1965).

At the same time it should be noted that there are large variations within Africa in population densities and land availability that only partly reflect differences in ecological conditions and the ease by which some areas more than others can be put under cultivation. A range of additional socio-political factors influences human settlement. One may easily recall the extensive land alienation during colonial rule in countries such as Kenya, Zimbabwe and Malawi where estate holders and settlers were given preferential access to the best agricultural land. Similar measures affected population distribution and land intensification locally in Northern Tanzania.

Restrictions or encouragement of rural to rural migration have also affected population distribution and enlarged regional disparities in development levels. This is a well-known consequence of the labour migration system during colonial rule. The villagisation campaign in Tanzania is another example. In this case, the endogenous process of land intensification was disrupted by the resettling and concentration of rural households into areas of quite different physical characteristics. In other cases, households' access to land may be restricted by their lack of capital or labour, be affected by ethnic biases and conflicting tenure systems, or be dependent on political connections for obtaining rights of titling and registration. Decisions to extend cultivation or to migrate may also depend on the availability of labour

in the household and be influenced by the return from alternative income sources, and so on.

Today, large and dense populations, cultivating the land on a permanent basis and in various stages of intensification, are typical of East Africa's highland and coastal areas (including those of Lake Victoria), most of which are considered to be areas of high agricultural potential.⁶⁶ Given the different factors influencing the distribution of the population, and taking account of the fact that human interaction with the environment actually may imply that the productive capacity of that environment is enhanced, there is nevertheless a strong (but by no means exclusive) correlation between the variables 'population density - intensification - natural endowments' (Turner II et al, 1993).

Endogenous versus exogenous change

Boserup's theory applies primarily to agricultural growth in subsistence oriented and 'closed' societies (i.e. endogenous or autonomous change). Under such conditions, the objective of agricultural intensification is the satisfaction of households' basic subsistence needs. Where markets and external exchanges are absent, there are few incentives for increasing production beyond the point of subsistence requirements although technological advances developed under the pressure of a growing population would permit this.

This is, however, an analytical distinction that may be less relevant to empirical situations, not only in today's rural Africa where households in various ways entertain economic and political links to the surrounding world and hold aspirations that require cash incomes, but also in the pre-colonial situation of East Africa. There are plenty of pre-colonial cases in which external contacts incited surplus production and facilitated the spread of productivity raising innovations (Iliffe, 1979; Kimambo, 1996; Koponen, 1988; Sutton, 1999).⁶⁷ The people on Mount Meru, for example, held

66 The definition of 'high potential area' used here refers to the capacity of such an area to produce high yields and/or income through high value crops. These two criteria are not always synonymous, but as noted by Lele and Stone (1989), they are largely overlapping in the case of East Africa.

long-standing contacts of trade and intermarriage with their neighbours to that effect (Spear, 1997).

Involution, agricultural stagnation, and conditions of growth

In societies where technological 'leaps' or other improvements in the productivity of labour for various reasons fail to come about or are insufficient, continued population growth may lead to a situation where, despite a heavy labour input in land intensification and despite an increase of *aggregate* food output, yields *per capita* are stagnating or even decreasing, causing a general impoverishment or pauperisation of the farming population. This process, essentially reflecting the law of diminishing returns, is known as 'involution' from a classical study by Geertz (1963) on intensification of rice cultivation on Java in Indonesia. It suggests, much in the same vein as Malthus, that population induced intensification at a given level of technology cannot go beyond the limit set by the supply and productivity of manual labour.

Crucial for avoiding the sinkhole of involution is the extent to which adaptations (e.g. technological innovation and institutional change) can yield per capita production increases sufficiently large to outpace population growth rates. It is debated whether such changes can be generated endogenously, particularly in a situation where population growth is rapid, or would require external support (for example by the state) or at least external contacts of some sort. Platteau, for example, argues that Boserup implicitly assumes that appropriate technologies are readily available for application. Boserup also takes for granted that resource scarcity invokes a homogenous response among all farmers, who are flexible and possess full information about alternative technical solutions (Platteau, 1993). Apparently this is a weak point in Boserup's theory according to which technological solutions are brought about endogenously, while in reality it can be demonstrated

67 Östberg (1999) hypothesises that where external links were absent, as in the case of the Marakwet area in Kenya, demands for a surplus for cultural and ceremonial purposes could have served as a driving force of intensification additional to that of population growth.

that most innovations in agricultural societies seem to have occurred through external contacts.

Lele and Stone (1989,9), argue that the model of population driven innovation may not be valid in situations of extremely rapid population growth such as the one seen in Africa, where the “*catalyzing factor of population*” appears to be ahead of the “*pace of farmer-based innovation*”. In this case, the gains of population growth in terms of increasing aggregate output may be offset by negative effects from continuous cropping in the form of land degradation and fertility loss causing declining per capita output (Lele and Stone, 1989,8ff). In fact, as pointed out by the authors, these reservations were already raised by Boserup (1965), lending credit to her model as one in which the positive effects of population growth on agricultural output should be interpreted as *conditional* rather than deterministic (Lele and Stone, 1989, 9). A more constructive way of approaching the question of agricultural intensification is to ask under what kind of conditions, internal and external, can involution (or Malthusian scenarios) be avoided and productivity raising technologies be adopted.

In Asia, Green Revolution technologies in high yielding crop varieties and modern inputs represented one part of a battery of externally generated and state-induced support systems, which resulted in per capita leaps in agricultural output and income through a radically improved productivity of both land and labour. While such measures were decisive in overcoming the problem of involution from the early 1970s, external factors in Africa have generally speaking not produced similar positive effects, especially in areas that are peripherally located in terms of markets and infrastructure. Areas of high population density have been somewhat more successful in avoiding involution and stagnation in spite of high population growth rates. Generally, these areas have been better endowed with markets, agricultural support systems and transport infrastructure (Turner II et al, 1993).

The significance of markets, off-farm employment and conducive state policies

In a review of a number of studies from different African countries, Turner II et al (1993) take account of cases where high population densities and in-

tensive agriculture have not implied a situation of agricultural stagnation or environmental degradation, but on the contrary have benefited farmers and proved ecologically sustainable. Turner II et al focus on the positive interplay between the forces of market and population, and conclude that high population densities encourage marketing infrastructures which in turn feed back positively on intensification. This conclusion complies well with Boserup's thesis of a critical lower level of population density as a condition for market and infrastructure development (Boserup, 1990).

Along the same line is Julian Simon's argument that technological change is a function of higher population densities, which increases the rate of human interaction and creates a conducive climate for the spread of new ideas and inventions (Simon, 1986) (for a discussion of these positions, see for example Tiffen et al, 1994, 261ff). In addition, markets are not only outlets for locally grown food but also imply opportunities of off-farm incomes (income diversification) that can ease some of the pressure off the land in terms of human numbers having to draw an income from it (Turner II et al, 1993).

In their study of Machakos District in Kenya, Tiffen et al (1994) argue that income diversification has positive effects on agricultural productivity since its components, migration and off-farm work, are sources of farm capital as well as of information and knowledge. The findings in a study by Livingstone (1990) on farm productivity and local absorption of population growth in Central and Eastern Kenya are also in line with this conclusion.

In elaboration of her original theme presented in '*Conditions of agricultural growth*' in 1965, Boserup has widely discussed the role of markets and government policies for agricultural development under conditions of population growth. In her view, commercial agriculture using high technology inputs cannot do without the existence of a working infrastructure and of a price structure that does not discriminate against producers. Both these factors are dependent on government policies (Boserup 1990, 50).

According to Boserup, African nations are not only handicapped by sparse, scattered and unevenly distributed populations making infrastructure investments expensive, but development is also constrained by governments that have failed to bring about such investments where they could have contributed to boost development (Boserup 1990, 38ff, 50-1). Apparent to every traveller in rural Africa is the formidable neglect of existing re-

gional and district road networks. During parts of the year, large areas are cut off from the world outside as roads, hardly negotiable under the best of circumstances, collapse under the heavy rains. This state of affairs bears testimony to an untapped agricultural potential, not only in areas of sparse population, as one would expect, but also in high potential, densely populated areas such as Arumeru District in Tanzania.

The 'Induced Innovation' thesis stipulates that a relative change in factor prices and resource endowments stimulates a local demand for small-scale technology that is responded to by external actors (Hayami and Ruttan, 1971). Unless such actors can meet this demand, for example through the research or extension system, or through private traders, farmer organisations or agroindustry, intensification through increased labour inputs alone may prove insufficient with stagnating per capita production as a result. The inadequacy of farmer-based (endogenous) innovation in Africa to solve present problems of sustainability and low productivity underscores what Lele and Stone (1989) deem a need for policy-led agricultural intensification. According to Lele and Stone (1989), policies and investments should primarily be targeted at high potential and high density areas for the simple reason that the short and long term returns to scarce development resources are highest in such areas (see, however, comments by Tiffen et al, 1994,269).

In the view of Lele and Stone, policies should not only mean the promotion of high value crops and higher yields generally, but also the removal of those barriers (physical, political or administrative) which are blocking smallholders' movement into and access to the most productive land (Lele and Stone, 1989,5-6). This latter statement most certainly involves the strengthening of tenure rights for smallholders. If it also means recommending far-reaching reforms regarding the unequal distribution and use of prime agricultural land, for example between smallholders and estate holders in places such as Arumeru District, is less clear.

Concluding comments

The bottom line of this discussion is that issues of agricultural growth and intensification, as well as those of stagnation and involution, can be seen

neither from the perspective of population driven endogenous technological or institutional change alone, nor isolated from a market demand point of view. Population factors and market demand can be seen both as driving forces of agricultural intensification and as conditioning factors. For example, by increasing the size and density of the population, population growth invokes pressures for technological change into existing farming systems, increases the supply of labour and demand for food, reduces the costs of infrastructure investments and facilitates economic interaction, access to markets and so on. In other words, higher population densities constitute an important condition for the successful outcome of market driven intensification, as the Tiffen study and the contributions presented in Turner II et al (1993) clearly show. Similarly, market demand can provide incentives to increase production beyond subsistence levels. Where population growth threatens to overtake the pace of 'endogenous' intensification, the presence of markets and income diversification opportunities may provide avenues of economic wealth and sustained living standards, as indicated by the studies referred to in this chapter.

The question of agricultural intensification in Africa is made urgent through unprecedented rates of population growth. Its solution, however, is intimately linked to policy and market related factors, the dynamics of which are most clearly seen in densely populated areas with access to urban markets. According to Tiffen et al, government policies should, among other things, facilitate the flow of information (education and extension) about new technologies and farming practices, raise farm-gate prices through transport improvements and minimisation of marketing costs, and provide institutional frameworks that guarantee secure and stable access to resources (Tiffen et al, 1994, 13,275ff).

The Kenyan Machakos case bears evidence of such positive population and market interrelationships under national policies that in the post-independence period have been at least partly favourable (Tiffen et al, 1994), and undeniably more favourable than those in Tanzania (Lele and Stone, 1989,28ff). In Machakos, the period between 1930 and 1990 saw a fivefold increase in population, a tenfold increase in the value output per hectare and a threefold increase in the value output per capita, partly as a result of the dynamics provided by the proximity to the Nairobi area (Tiffen et al, 1994, 13,46). Within this period, the combined positive effects of population

growth and markets on productivity have outpaced any threat of involution and pauperisation.

The current rapid increase and significance of off-farm incomes in the livelihoods of rural households, however, may however also indicate the possibility that land fragmentation in some of East Africa's most densely populated areas has reached a level where off-farm incomes do not only incite agricultural intensification but also constitute new modes of livelihood. While off-farm incomes for some households may contribute to the viability of their family farms, for others, under the pressure of shrinking land resources, they may imply a neglect of remaining farm resources.

These perspectives also demonstrate that the issue of agrarian change cannot be seen simply as one of a race between food supply and human numbers. Questions of food security, food entitlement, poverty reduction and rising standards of living are fundamentally linked to agricultural growth but not in the sense that all households necessarily must produce its own food and beyond that, a surplus to sell. Where population is dense and interacts with urban markets under favourable policy conditions, a more complex and diverse labour division is likely to emerge. In this situation, some households will partly or wholly involve themselves in farming non-staple crops or in earning incomes outside farming. Next, we will look at the role of income diversification in terms of household livelihoods and broad societal change marked by agricultural growth and crisis.

Diversification of livelihoods and the 'de-agrarianisation' thesis.

Introduction

Income and agricultural diversification has gained a renewed interest in the recent decade as a possible venue for raising productivity and income in the smallholder sector (Barghouti et al, 1992, introduction). This is in contrast to the earlier mainstream perspective, which in accordance with the classical peasant and modernisation paradigm assumed a homogenous peasantry and saw agricultural specialisation as the single path to development. The interest in diversification thus represents a growing recognition by researchers and development practitioners of the complexity of local livelihoods and of the multiple reactions shown by local societies to external interventions.

The interest in diversified production as a development strategy is not only justified on the basis of productivity concerns, however, but also on environmental concerns. While monocropping and 'chemical' farming have been increasingly associated with environmentally negative effects, the kind of mixed farming or agricultural diversification practised by smallholders is generally assumed to be ecologically sound (Netting, 1993a, 123ff; Petit and Barghouti, 1992, 2; Timmer, 1992).

Most commonly, income and agricultural diversification has been interpreted as risk-coping strategies in places where the climate or markets provide uncertain conditions of production. The other side of this coin, more recently recognised, is that diversification provides potential sources for eco-

conomic gain and accumulation and for productivity increases in agriculture. This leads to improved rural livelihoods and has positive effects on the macro-economic environment as a whole (Petit and Barghouti, 1992).

Given the uncertain institutional and market conditions facing smallholders in Africa, diversification may thus reduce production and price risks, increase the flexibility of the producer to respond to market signals, level out income and labour supply over the year, improve household income, stand a greater chance of being environmentally sustainable, and contribute to agricultural growth (Ellis, 1998, 10ff, 13; Petit and Barghouti, 1992, 1, 6).

Our main concern in this chapter is diversification between economic sectors, i.e. inter-inter-sectoral or income diversification. Associated are the positive synergy effects on farm development from off-farm incomes (see, for example, Tiffen et al, 1994, and Turner II et al, 1993). Also, in terms of improved flows of information and knowledge, off-farm diversification may have clear positive effects on farm productivity and the environment. The Machakos case discussed in the previous chapter provides such an example (Tiffen et al, 1994).

In line herewith, Bagachwa and Stewart argue that off-farm incomes in the African context are found to have improved income distribution and reduced poverty through positive linkages between the agricultural and non-agricultural sectors (Bagachwa and Stewart, 1990, in Limbu, 1995, 6). While the share of off-farm employment in the incomes earned by smallholders is high in many developing countries, a study by Collier et al showed that in Tanzania in the early 1980s, less than twenty per cent of the rural working force was employed in off-farm activities. The authors concluded that the persistent poverty in rural areas was partly due to a lack of off-farm income opportunities for poor people as a result of the Ujamaa policy (Collier, 1986, 42).⁶⁸ According to Limbu (1995), the share of the working force involved in off-farm activities has increased substantially after 1985.

There are, however, also critical views of the general assumption that income diversification in the African context alleviates poverty and social differentiation by providing alternative income sources to households with litt-

68 Other surveys found substantially higher figures on households' involvement in off-farm activities, this leaving the estimates to also reflect methodological and operational issues in data collection (see Seppälä, 1998, 174).

le or no land. As far as differentiation is concerned, some African case studies suggest that the greater access to off-farm incomes by well-to-do households when combined with commercial farming on large holdings may accelerate rather than reduce existing income inequalities (Bryceson, 1999b, 26ff). Similarly Assmo (1999), in a study of agriculture on Mount Meru in the 1990s, argues that off-farm incomes may have negative environmental effects on farmland.

What is diversification?

'Diversification' is a somewhat ambiguous term since it refers to diverse activities both *within* farming (e.g. multiple crops, livestock rearing etc.) and *outside* farming (e.g. employment, business etc.). Most commonly, the term 'diversification' refers to combinations of farming on the one hand and various other off-farm or non-farm activities such as employment, crafts, trade etc. on the other, i.e. 'inter-sectoral diversification' or 'income diversification'. Diversification may take a *spatial*, *seasonal* or *temporal* form, in which emphasis is given to different activities, including migration, carried out simultaneously or in a sequential or serial fashion during different parts of the year (Seppälä, 1998, 34ff). Diversification has also a *socio-economic dimension* bearing on different aspects of the household labour division, wealth aspects etc. And it has a *cultural* dimension in that some types of livelihoods more than others tend to be associated with social and cultural spheres bearing on distinct characteristics and values of its members (Seppälä, 1998).

According to Seppälä (1998, 193ff), rural livelihoods are best understood and studied through what he calls 'diversification theory', which gives emphasis to the complexity and diversity of the local economy, recognises the social and cultural embeddedness of economic transactions, departs from the perspective of the actor and holds a synthesising ambition as to bringing together related explanations of peasant behaviour such as those referring to entitlement, straddling, institutional economics etc. Thus, diversification theory emphasises both macro-economic and political structures as well as the local resource environment as important background factors against which diverse livelihoods by individuals for both survival and accumulation makes sense. Diversified livelihoods, in their turn, affect the societal and lo-

cal structure, for example by increasing social and economic differentiation and resulting in increased production, improved flow of goods and distribution, enlarged safety networks and so on (ibid, 196-200).

In the following, we will discuss further the concept of diversification, drawing largely on Frank Ellis' article on the subject, which encapsulates most of the dimensions covered by and discussed by Seppälä (Ellis, 1998). Following Ellis, diversification is defined as "*the process by which rural families construct a diverse portfolio of activities and social support capabilities in their struggle for survival and in order to improve their standards of living.*" (Ellis, 1998,4).

It is important to note that diversification not only means that households engage in a variety of activities as such but that many activities represent local and individual 'specialisation', owing to individual skills, location specific conditions, cultural peculiarities, network resources and so on. Specialisation as a way of advocating personal skills or drawing advantage from geographical or social differences in resources through a flexible part-time occupation alongside farming is a precondition for the exchange and circulation of goods, services and money (Seppälä, 1998). 'Flexible specialisation' is a term capturing much of the essence in the diversification strategies pursued by households and individuals. It embraces processes that aim to create market segments and social networks, reduce transaction costs and manage risks (Seppälä, 1998, 202ff).

What is different now compared to the situation a few decades back, is the possibly larger proportional reliance on cash generating off-farm pursuits in the diverse mix of activities and income sources engaged in by households. Topical here is the 'de-agrarianisation' thesis forwarded by Bryceson (2000; 1997a; 1997b; 1999a) and by Bryceson and Jamal (1997).

Non-farm or off-farm rural labour?

There is no consensus in the literature as to what kinds of activities should be labelled 'non-farm' and 'off-farm', respectively. For simplicity, we term all activities that are distinct from own account farming and exempt from the intention of own direct consumption as *off-farm activities* generating *off-farm incomes*. With off-farm we refer to activities distinct from farming rath-

er than to the actual location of the activities. Most often do these occur outside the farm location but in some cases they may actually be located at the farm homestead itself (as is commonly the case of crafts).

The use of the term *non-farm*, on the other hand, often creates confusion as to whether wage labouring or petty trade within the agricultural sector is included or not, as our review of the literature reveals.⁶⁹ It should be noted that in the Asian context, where agricultural wage labour is more common than in Africa, the term non-farm is commonly applied in order to distinguish between agricultural and non-agricultural wage labour. In this interpretation, a farmer who works part time as a bus conductor diversifies but one who temporarily works for wages on a wealthy neighbour's farm does not, since in the latter case the work takes place within the agricultural sector. Although not explicitly indicated, we take it that de-agrarianisation, in spite of using the term 'non-farm rural employment' (NARE), encapsulates both types of wage labouring as indicators of one single process, namely the one by which the rural population is becoming less agrarian in nature, meaning that farmers are becoming less dependant on own account farming (Bryceson, 1997a).

Hence, in our view, (inter-sectoral) diversification refers to the parallel undertaking of regular farming activities *and* off-farm activities. The latter may take place both *within* the farming sector (for example in the form of wage labouring on other people's farms or trading farm produce), as well as *outside* this sector. This mix of livelihoods and income activities are sometimes characterised as '*pluri-activity*' or '*straddling*', referring to the daily or seasonal straddling by household members between different sources and places of incomes.

Off-farm incomes mostly refer to a wide range of trade, craft and self-employment activities, carried out on an individual or family scale of operation. Sale of water, firewood, charcoal, animal fodder and consumer goods

69 Ellis (1998,5), considers wage labouring on other farms or trade activities in agricultural produce to be 'off-farm', while activities that take place outside the farming sector are 'non-farm' regardless of the location of the activity. Others treat these income sources as similar since they are both distinct from own account farming. In the literature they are commonly and inconsistently referred to as either 'off-farm incomes' or 'non-farm incomes'. Limbu (1995,6), for example, shares with others the definition that wage work on other people's farms is a RNA (Rural Non-farm Activity) since it is comparable to the sale of labour to non-farm types of activities.

for every day use are common activities. Typical are also food and beverage trade, especially beer brewing as well as various kinds of transportation activities. Various kinds of crafts and self-employment in the form of tailoring, brickmaking, carpentry, metal working, butchering, milling, leather goods production, pottery etc. are also common. Some farmers, however, may combine farming with off-farm activities on a larger scale of operation and drawing on greater capital. Such activities may include the wholesale trading of crops and consumer goods, various types of transport businesses, construction, urban investments in real estate etc.

As noted by Lipton (1984), the kinds of activities mentioned are particularly suitable for the family mode of production, since they are subject to the same kind of labour flexibility (and self exploitation) that characterise smallholder farming. In addition, the capital required for entry is relatively small and is provided by the same persons who carry out the actual work. Activities occur in competition with others, and outside the legal restrictions constraining activities run by formal sector businesses (ibid,1984).

In addition to these various forms of self-employment, household members may work for wages, temporarily or casually, or as a steady undertaking, for payment in cash or kind. Rural employment often occurs according to an informal contract, quite unlike the kind of employment offered by the government, private companies or estate farms where legal rules of minimum wages, working hours etc. apply.

Defined as off-farm incomes are also incomes in the form of remittances from migrant workers to their home families or from children to their parents, as well as property income stemming from various land tenure arrangements. Rapidly increasing in some villages in Meru are for example rent incomes earned from accommodating migrant labourers on one's farm. Education provides an ambiguous case since it in some respects can be regarded as an off-farm activity for which the pay-off comes later in the form of higher income. For practical reasons, however, in the analysis we excluded education as an off-farm activity.

Social and cultural dimensions

It may be more appropriate to talk about livelihood diversification rather than just income diversification on the basis of the social and cultural dimensions of diversification. Apart from encompassing a diversity of incomes (in cash and kind) from several different sources, a livelihood includes the social institutions, networks, gender relations, property rights etc. through which various kinds of incomes are raised and maintained. For example, the social institutions through which livelihoods are mediated may act to suppress economic opportunities for some and facilitate it for others (Ellis, 1998, 4, 11). And, Seppälä notes that the exchange of labour, goods and services can only partly be analysed as economic transactions. Many goods and services cannot be given a monetary value but are produced and exchanged as cultural or social items (Seppälä, 1998, 114ff, 200ff).

Both agricultural and sector diversification are influenced by local institutions and cultural norms prescribing who should do what tasks. Opportunities for income may thus differ between different members of a community due to gender and age aspects, wealth concerns, property and inheritance rules and so on (Ellis, 1998, 4ff). The notion of livelihood diversification also requires a more extended conception of the household than is normally the case, since incomes (remittances) from absent household members may constitute a significant part of residing members wellbeing.

How can a large number of micro-entrepreneurs survive in the competitive economic environment that a small rural area constitutes? One answer is the 'flexible specialisation' we mentioned above. Another is the fact that social and kinship networks are crucial for income generation, labour mobilisation and business connections, as stressed by Seppälä (1998) and others. In a less formalised economy, social networks are essential for providing capital and market segments, ensuring stable prices and reducing risks. Such networks include marketing contacts, middlemen and urban-based patrons and are often organised in a hierarchical manner. Households lacking networks are probably more exposed to risk of crop failure and income loss than those who have access to a large kinship or social network or relatives/children who can look after them at old age.

Apart from these general aspects, there are a number of other socio-economic dimensions of income diversification (for an overview, see

Ellis, 1998, 10ff). Some of these have been mentioned, such as aspects of risk spreading and income maximisation (Chapter Two), and whether off-farm incomes are likely to improve agricultural productivity or not (Chapter Six). Other concerns such as the relationships between wealth, inequality/differentiation and off-farm incomes will be dealt with in Part III. We will not repeat here what has been said earlier or forestall the upcoming discussion. Instead we will turn to relate trends in diversification to general changes in macro-economic conditions.

Trends and interpretations of diversification

According to Petit and Barghouti (1992,6) there is a definite trend towards more diversified livelihoods in response to the technological and macro-economic conditions that now face developing countries. Although agricultural diversification is an inherent part of smallholder livelihoods, the actual mix of marketed crops and produce is to a great extent market driven. The extent of agricultural diversification versus that of specialisation will, however, also be influenced by factors such as on-farm constraints of labour and other production resources, opportunities of contract-farming, level and kind of extension services, externalities in the form of market terms and demand, institutional conditions, off-farm opportunities, and so on (Petit and Barghouti, 1992, 6,9).

Timmer (1992) sees agricultural and inter-sectoral diversification in Asia as farmers' response to two factors or processes. One is a currently low commodity or producer price for staple crops, owing partly to the past success of the Green Revolution in raising food supplies (ibid, 1992,31ff). This positive development was largely a result of governments' financial support to the agricultural sector. In the late 1980s and 1990s, however, there have been cuts in the fiscal budgets for countries that formerly supported agriculture. Reduced support has forced farmers to look for crops and produce that fetch higher market prices than staple crops and to grasp opportunities for income in the non-farm sectors.

The other process raised by Timmer as an explanation for the increase in diversification is the structural transformation every economy experiences as a result of agricultural growth (ibid, 1992,29ff). It is argued by Mellor that

the faster agriculture grows, the faster declines its relative share of GNP (Mellor, 1995, introduction chapter; Timmer, 1992,29-30). This is because labour productivity and incomes are higher in the non-farm sectors, attracting rural people to urban jobs and farmers to seek partial employment and to diversify outside the farm sector (Petit and Barghouti, 1992,1). In the light of these two processes reflecting low commodity prices and structural change, respectively, Timmer regards agricultural diversification as a bridge between declining incomes from food staples and a complete exit from agriculture.

With the risk of over-simplification one may argue that while Asian governments largely effected successful agriculture-led growth in the 1970s by subsidising strategic components in smallholder agriculture, African governments promoted a strategy of industrialisation through import substitution, which was partly paid for by taxation of smallholders (Jaffee, 1992,61-2; Mellor, 1995). This is one of the reasons for the relative successful agricultural and economic development in Asia, and for the corresponding crisis in Africa.

In contrast to Asia, where current macro-economic adjustments occur against a background of two decades of positive agricultural development, the drastic reductions in fiscal budgets that now are taking place in Africa do so against several decades of agricultural stagnation, and without the positive spill-over effects on industrialisation that is a part of the of the Asian economic 'miracle'. With few prospects of radical government support in order to boost incomes in African agriculture, and with a high rate of population increase, the problems of fiscal contraction described by Timmer (1992,29) in relation to Asia apply even more to Africa. There is a lot of future strain on agriculture to generate jobs at a pace that can match the rate of new entrants into the labour force.

As noted by Bryceson (1997b, 257), the neo-liberal mood of our times has ruled out a recourse to conventional state driven agricultural growth. And Lele's and Stone's (1989) plea for a policy led and state induced agricultural intensification remains unresponded to by the main donors and national leaders. Yet, after nearly two decades, the neo-liberal policy package has yet to prove its effectiveness in raising broad agricultural output. Africa is still quite far off anything like an Asian styled Green Revolution.

On this basis, agricultural and off-farm diversification in Africa to a greater extent than in Asia appears to be a response to a crisis within smallholder agriculture, resulting in a systematic shift in the peasant mode of livelihood from agriculture to non-agriculture, a process Bryceson and Jamal (1997) have termed 'de-agrarianisation'.

'De-agrarianisation' in the African and Tanzanian context.

'De-agrarianisation' is defined by Bryceson (1997a, 4-5) as 'a long term movement away from peasant modes of existence' involving processes of occupational adjustment, reorientation of incomes, spatial relocation, and new types of social identification. Bryceson uses the term 'non-agricultural rural employment' (NARE) to depict the shift in occupation and income sources affecting rural households and to emphasise the non-agricultural character of the diverse activities involved, including wage labouring on other peoples' farms. NARE, or what we here prefer to call off-farm activities, is an integral part of the broader process of 'de-agrarianisation', which gained pace after independence and then involved a higher incidence of formal and regular employment than is the case today. De-agrarianisation was then almost equivalent with urbanisation since most employment opportunities were located in the main urban settings (ibid, 5ff).

Table 7.1 gives some statistical aggregates and indicators of de-agrarianisation in sub-Saharan Africa and Tanzania from the 1960s to 1990s. During this period there has been a decline in the rural population following urbanisation. The decline of the agricultural labour force implies a corresponding increase in the proportion of the labour force active in other sectors, particularly in the service sector.

While early post-independence de-agrarianisation was an effect of African governments' attempts to industrialise in line with the import-substitution strategy, more recent forms of de-agrarianisation can be said to reflect the economic crisis following the failure of this strategy. According to Bryceson (1997a; 1997b), de-agrarianisation in the form of income diversification has accelerated in the recent decades in response to the worsened conditions of peasant agriculture following structural adjustment programmes.

Under structural adjustment, public provision of social and marketing services have been largely curtailed. Starved of services and consumer goods, including transport, during many years of crisis and adjustment, the high demand for such goods and services provide incentives and entry points for off-farm activities among rural household members (Bryceson, 1997a).

Table 7.1: Macro-economic indicators of de-agrarianisation 1960-90.

	Annual Urban	Rural		Labour force		Labour force		Labour force	
	Migration Rate	Population		in agriculture		in industry		in services	
	(%)*	(% of total)		(% of total)		(% of total)		(% of total)	
	1960-90	1960	1990	1965	1986-89	1965	1986-89	1965	1986-89
<i>Sub-Saharan Africa</i>	2.4	85.0	69.0	92.0	85.6	3.0	4.5	6.0	9.9
<i>Tanzania</i>	6.9	95.0	67.0	79.0	67.6	8.1	7.7	12.9	24.7

*Urban Population Growth Rate minus Population Growth Rate.

Source: UNDP, Human Development Report 1992, selected from Bryceson (1997a, 6-7).

While correcting some of the prior market imbalances that were due to the state monopoly of markets for food staples and export crops, new constraints on agricultural production have been added with structural adjustment (e.g. retrenchment of extension staff, dramatic price increases for farm inputs etc.). According to Havnevik (1999), there is an overall uncertainty among Tanzanian smallholders regarding the direction and intention of market and institutional reforms (land tenure is the perhaps clearest example), which he claims results in more diversified livelihood strategies.

As a result, rural households may shift into what Ponte (1998; 2000) in a recent study has called 'fast crops', which are crops (mainly vegetables) for which the cultivation period is short, market demand is secure and payment directly follows delivery. Another strategy is the pursuit of off-farm activities. Both ways serve to satisfy farmers' greater demand for cash to buy consumer goods and pay for services, which formerly were provided free by the government. Diversification is thus associated with a monetisation of the rural economy where 'free' goods or services, or payment in kind, give way to money transactions (Bryceson, 1997a, 10; Ponte, 1998).

Seppälä (1998, 196ff) describes the structural condition under which diversification thrives as one in which the state is reduced to a shell of its former capacity and lacking popular legitimacy. The incapacitation of the

state produces economic instability. At the same time, the multi-party reforms have undermined national economic and political control, creating a plurality that contributes towards diversified livelihoods and increased dependence by local people on informal networks and different forms of patronage.

Also another force, that of rising population densities and land shortage, due to which increasing numbers of smallholders are losing their agrarian assets, contributes to the economic pressures facing rural households. Sometimes associated with population growth is environmental degradation of farmland forcing people to look for alternative incomes. Bryceson concludes that off-farm incomes in some cases are reinvested in agriculture, particularly for the small groups of farmers who are moving upward into large-scale commercial farming. For most rural dwellers in Africa, however, off-farm activities rather seem to represent a lifeline in light of the overarching economic pressures they face with respect to resource constraints and worsened market conditions for staple and export crops (Bryceson, 1997b, 238ff).

Pull factors

While the above discussion has dealt with factors that 'push' rural dwellers out of agriculture, there are also 'pull' factors and opportunities associated with diversification and de-agrarianisation. In Tanzania, for example, there is a marked increase in the demand for consumption goods, which for many years remained absent from the shop shelves. Aspirations to acquire these and other goods and to grab opportunities for higher income and hence of improved wellbeing, are the motivational factors behind household members active search for off-farm incomes.

As noted by Bryceson (1997b, 242), many African youths have thrown themselves wholeheartedly into the spirit of Western consumerism. Perceptions of western life styles have spread rapidly into rural areas, fuelled by media and other means of increased cultural contacts, such as tourism. Consumerism in a Western fashion serves as an ideological force propelling especially young people to seek alternatives to agriculture (Bryceson, 1997b, 243).

A change of peasant identity

Inevitably, such a radical change in aspirations and lifestyles demanded by the young imply growing generational tensions. It also presents challenges to traditional values and institutions. Does diversification also imply a change of social identity, asks Bryceson (1997a, 9)?

Kearney (1996) asks similar questions in light of what he sees as a global erosion of 'traditional' peasant livelihoods. In many parts of today's world, peasants constantly transcend the borders of their communities, temporarily, spatially, and socially. A 'peasant' may grow crops in his home area using family labour and simultaneously run a local business with hired labour, while during a part of the year migrate for wage labour to an urban area, or even to a different country. Can we really call livelihoods that are only marginally based on farming (i.e. 'de-agrarianised' livelihoods) peasant livelihoods, asks Kearney?

Kearney calls the flexible 'peasants' seen in many rural communities today "*polybians*", because they "...*adapt their being to different modes of existence as they opportunistically move in and out of different life spaces...*" and display a corresponding spectra of contextual roles and identities that blur the distinction between rural and urban, traditional and modern, and so on (Kearney, 1996:115ff,141).⁷⁰

In contrast to Kearney, however, other scholars consider the 'polybian' type to be compatible with peasant farming. The fact that rural dwellers diversify incomes, for example with wage labour or seasonal migration, and transcends the borders of informal (traditional, local) and formal (modern, national) institutions is well known from history.

When we speak in terms of social identity, cultural values and attitudes, the effects of diversification and de-agrarianisation are more uncertain. While the young often reject traditional values in favour of Western attitudes and life styles, middle-aged rural dwellers are less likely to do so, Bryceson (1997,10) argues. The latter are deeply rooted in a society that from a cultural and moral point of view is agrarian (see Chapter Two). Although agriculture for many local people is a dwindling activity in economic terms,

70 The term 'polybian' stems from 'poly' meaning many and 'bios' meaning life.

they hold it in great esteem socially and morally. Access to land, no matter how small it is, is essential for one's social identity and sense of belonging.

While researchers wrestle to find analytical terms that can grasp the social dimension of de-agrarianisation using terms such as 'occupational marginalisation' and 'marginal peasants' (Shanin, 1988) or 'polybians' (Kearney, 1996), rural dwellers very often consider themselves to be farmers. The social identity of rural dwellers depending on off-farm incomes is thus based on the partly illusive idea that they are subsistence farmers in the last instance (Bryceson, 1997,10).

De-agrarianisation, diversification and structural change – the dissolution of the peasantry?

The discussion we have taken up here narrows down to the central question regarding peasantisation/de-peasantisation that we set out in Chapter Two, namely what do off-farm incomes and de-agrarianisation mean for the continued existence of peasant societies?

Bryceson (1997,244ff) has identified four major trajectories of structural change following what she sees as the dissolution of the peasantry under de-agrarianisation in Africa. These trajectories, by no means exclusive, imply foremost a change of livelihood but may also include changes in residence and social identity. The first path is an increase of "labour flight" or migration, both of cyclical migration and of urbanisation. The second path, "*rural non-agricultural labour diversification*" encapsulates much of the discussion reviewed in this chapter. The third one, implying a *change of agricultural labour form*, or a gain or loss in labour autonomy, is associated with increased rural inequality. It implies declining agricultural assets, lack of mobility and fewer off-farm options for broad masses of peasants, and a concentration of wealth in the hands of a few large-scale farmers.

The forth trajectory, of less interest to us here, represents '*a labour drop-out route*', encompassing individuals who are socially and economically marginalised in relation to peasant origins. They represent the extremes of the social spectrum with the common characteristics of being social outcasts. The old and the infirm who lack support belong here, but also youth who

opportunistically live off rural and urban producers, for example, through theft or outright banditry.

The second path, 'non-agricultural labour diversification', represents a development path that is opposite to the classical and modernist view that the dissolution of the peasantry is a process marked by increasing occupational specialisation. The third path, however, is largely in line with the Leninist thesis of increasing polarisation of the peasantry as a result of economic compulsion, although population pressure was not discussed as an economic force of differentiation by Lenin and specialisation rather than diversification was the mechanism leading to economic polarisation (Lenin, 1982).

What Bryceson draws attention to is not only the consequence of market related forces but also of the resource constraints invoked by population growth. In areas of land shortage there are increasing generational differences in farm assets. With land being fragmented into tiny plots, the flexibility and fallback option of subsistence farming is lost. Instead of flexibility and a range of income options there is increased fragility as the young generation is forced into a limited range of lowly paid off-farm alternatives. In this way, 'de-agrarianisation' converges into de-peasantisation and economic and occupational polarisation.

This stands in stark contrast to Netting's position that the increased integration by households into market relationships in the form of household members' wages or incomes from trade or crafts may not necessarily be an indicator of peasants being squeezed out of farming. According to Netting (1993, 191), off-farm activities allow them to continue farming and to preserve their land and way of life during periods of economic pressure. In Netting's view, off-farm work is an integral part of smallholder farming.

In spite of Netting's optimistic stance, de-agrarianisation as a process reflecting the forces mentioned by Bryceson is nowadays a relatively well-documented one, and a number of studies on this issue have surfaced in the last decade, partly as a result of the DARE research programme at the African Studies Centre in Leiden (for Tanzania, see for example, Jambiya (1998), Madulu (1998) and Mwamfupe (1998)). Inevitably, a large number of (marginal) peasants will leave their land as their main source of income, albeit not mentally. But does this process necessarily imply the dissolution of the peasantry with large-scale capitalist farming replacing it?

If by peasant farming is meant an essentially family based production, the 'peasant dissolution' scenario suggested by Bryceson is perhaps more uncertain. In view of developments elsewhere in the world, the family type of farm has proved extremely viable. Part of this viability lies in the option of livelihood diversification. In spite of the fact that many sons will leave farming and homesteads for other occupations and places of residence, Netting's argument that diversification serves to preserve the farms of those family members remaining in the village seems a plausible outcome, but in the case of Meru, requires empirical validation.

We now turn to investigate the conditions, determinants and consequences of agricultural intensification and 'de-agrarianisation' and their interrelationships in Meru, departing from the fundamental changes that occurred with the introduction of money and cash-crop farming during colonial rule.

Land use intensification, cash crop farming and off-farm incomes during colonial rule.

Introduction

The Meru have responded to population pressure, and to aspirations of improved wellbeing, by i) raising the volume and value of farm production per acre, ii) exploring opportunities for off-farm incomes, and iii) migrating in search of land or incomes. The majority of households have combined these activities, levelling out seasonal differences in workload and increasing the division of labour between different household members. In the background chapters, we touched on the migration response to population pressure. In this and the following chapters we will focus on land use intensification and off-farm incomes.

Farm or land use intensification during the colonial period has recently been documented in detail by Spear (1997). Hence, we will only summarise general developments here, highlighting some points that deserve further attention and thereafter, in the subsequent chapters, concentrate on post-colonial trends.

Theoretically, land use intensification can be analysed as a response to either population growth or market demand. While each of these driving forces, when analysed separately, may generate valuable insights into agrarian change, they are in practice inseparable and mutually reinforcing. As we argued in Chapter Six, it is important to recognise that the intensification (or involution) path to agrarian change is highly dependent on policy and

institutional factors as well as on infrastructure endowments, external contacts and information flows. At least the latter two are associated with the off-farm activities pursued by household members.

In line with the above statement, it must be emphasised that save for the moral aspects of the historically unequal land distribution between settler/estates and smallholders, it can be argued that the presence of the former has positively influenced the latter in terms of farm performance. The question whether Meru agriculture would have been equally successful without the catalysing impact of nearby large-scale farms is hypothetical. In outlining past agricultural change on the mountain it is evident that the relation between the two types of farms has not been static but dynamic, and one which the Meru skilfully have used to their advantage in terms of raising total output from the land.

Colonial period – broad trends of change

As the Meru slowly began to restore their devastated economy following the end of German punitive actions in the closing years of the 19th century, they found themselves within an entirely new political and economic order. Colonial rule put an end to the political unrest that had beset the region during the preceding decades and it installed foreign authority over the people of Mount Meru. The *mangi* (the Chief) and his councillors became the local representatives and executors of the foreign power, a system that became known as 'indirect rule'. The Meru were thus defined as a tribe who's chief was ruling a specific territory divided into locations for tax collecting and administrative purposes.

Political subjugation was not the only element in the creation of the Meru peasantry, however. Equally important were the economic compulsion and opportunities that took place through the introduction of money and taxation and as markets for crops, labour and manufactured commodities emerged. In the years that followed, the Meru increasingly depended on and prospered from the economic opportunities that foreign rule and growing trade implied. Market dependence, however, was never complete as the Meru kept part of their farm production for home consumption.

Foreign rule also brought cultural change. Christianity and the colonial administration brought Western values and new religious beliefs, and education opportunities for some. Missionary activities also meant the introduction of modern health care and disease control. In Meru, these aspects were mainly cared for by the Lutheran Church, which in 1902 established its first mission at Nkoaranga. Political subjugation, economic integration, and missionary activities were elements of colonial rule all over Tanganyika. In Meru, as we have seen, colonial rule had a further meaning. It implied the granting of vast tracts of prime agricultural land at the foot of the mountain to European and Boer settlers.

With reference to these general changes connected with colonial rule, we will point at three factors of particular importance for the content and pattern of agrarian change that emerged in Meru over the entire colonial period. The first factor was that access to money and markets increasingly was having an impact on the welfare situation of individual households. As a result, new sources of wealth, and new strategies of livelihood and land use developed that correlated with the demands of the market. For example, although Meru men traditionally were cattle raisers, the new economic environment slowly began to alter their previous inclination and made them more prone towards both wage labour and farming. Another factor was the gradual shortage of land for cultivation and grazing and the reactions it produced. The land shortage was due to the combined effects of land alienation and population growth as we outlined in Part I. A third factor was the basic education and training that was offered by Lutheran missions after 1902, a fact which gave early Christian converts and their descendants a distinct advantage over the illiterate majority through their ability to adapt to and benefit from new income opportunities.

These factors, i) the linking of Meru households to markets for crops, labour and consumer goods, ii) the need to respond to the land shortage situation, and iii) the emergence of a small but distinct, educated and Christian group who adopted European manners and positioned themselves in the forefront of market oriented agriculture, were decisive for the ways livelihoods developed on the mountain as a whole in the colonial period.

Inevitably, these changes created tensions between elderly heads and young heirs, between those with education and those without and between those in favour of change and those who were against. Economic inequality

did not emerge with colonial rule but it was given a new meaning as new avenues of accumulation were opened up and as new means of wealth developed. Different households and individuals were more or less apt to manage the new situation of market opportunities and competition for land. The evolving pattern of economic inequality was, however, also affected by the indigenous institutional framework, which both facilitated and constrained individual accumulation of wealth. We will return to this issue in Part III, while concentrating here on the broad pattern of agricultural and livelihood change.

Population and market driven changes

The broad changes regarding land use during this period lend themselves to an ideal application of Boserup's thesis, as noted by Spear (1997, 151ff). As population increased, people gradually spread eastwards and southwards from the densely populated middle slopes in West Meru. One phase of expansion took place during the decades before the German arrival, when it was temporarily halted. It resumed after World War I following the increase in population during British colonial rule. As land for grazing became exhausted, cattle herds were moved to the northeastern highlands (Ngare Nanyuki) or to the southern or eastern plains, this process beginning in the 1930s and gaining speed in the decades thereafter. The former patches for grazing on the mountain were transformed into fields for annual crops, first for cultivation on a rotational basis and later for permanent use. With land used for cultivation, only a small stock of milking cows were kept at home, stalled in and fed by hand with banana leaves and grass collected from the neighbourhood. Gradually, as population increased further, fields for annual crops were planted with perennial crops. By increasing the density of banana plants, and combining them with coffee and other crops, both the total volume and value of production increased per acre. The stalled in cattle provided animal manure, which together with green manure replenished soil nutrition in an intensive and laborious cultivation system that later became known as 'mixed farming' and which development mirrored the system already established on Mount Kilimanjaro (Ruthenberg, 1968, 213ff).

Technological innovations and improved management went along with these changes. A complex network of irrigation channels criss-crossed the lower mountain slopes. These provided a safety valve against drought and enabled growing seasons to be prolonged. Iron tools began to replace wooden digging sticks in the 1920s. Ox driven ploughs and graded dairy cattle were introduced in the 1940s and 1950s. Chemical spraying and improved processing and management techniques increased coffee yields per acre from the 1940s onwards. After independence, the adoption of artificial fertilisers and improved maize varieties increased yields of food crops as well. The workload per capita increased as a result of these changes, much in the way that Boserup stipulated (Chapter Six).

We should note, however, that the land use changes occurring during the colonial period and thereafter did not come about solely as a result of population pressure and did not solely result in the preservation of a constant per capita consumption level. In fact, the Meru for most of the colonial period experienced rising productivity of labour and per capita incomes in spite of rapid population growth and land fragmentation, a development that continued well into the 1970s. The Meru case demonstrates that land use intensification is as much a result of the external (market) demand for local farm produce as of population growth, hence giving support to the argument we brought up in Chapter Six that the two driving forces of agricultural change cannot be seen in isolation of one another.

To the extent that population induced changes at all can be treated in isolation from the market, they appear to refer to the general and relatively straightforward changes of land use we outlined above. The role and potential of the market to raise living standards and per capita incomes in a situation of rapid population growth, on the other hand, is a less investigated issue. We will attempt that path here and in the following chapters, giving emphasis to the effects of off-farm activities and agricultural policies on farm performance and rural incomes.

We should also be aware of the fact that the hitherto relatively successful outcome of Meru (and Arusha) adaptations to shortage of land has been dependent on a number of conditions, some of which are not present in all societies facing population pressure (see also discussion by Spear, 1997, 152). First, the Meru enjoy a physically favourable environment responding well to intensification of land use. Rich volcanic soils and plentiful water

from rainfall and irrigation are important assets putting the Meru in a privileged position vis-à-vis many other societies. Constraints to endogenous change are likely to be more pronounced in environmentally more fragile or water scarce regions of the country, areas which often are less endowed with markets and infrastructure. (Christiansson, 1986; Lele and Stone, 1989; Platteau, 1995).

Second, the Meru were able to acquire additional land on the plains, which in the 1960s helped them develop commercial production on the mountain and yet maintain a degree of self-sufficiency and independence in food crops. Third, proximity to urban markets in terms of short physical distance and good infrastructure have no doubt facilitated the choice of market solutions to population pressure, regardless of whether this has meant increased sale of farm produce or off-farm employment.

Generating off-farm incomes – waged work during the early colonial period

During the early colonial period, few Europeans considered the indigenous population capable of commercial production. The official policy was to develop the district for European large-scale farming for export. The Germans and later the British saw in the local communities foremost a potential source of labour for the estates in the district. Gradually, however, they came to recognise that both the Meru and the Arusha were capable of raising their development level through own account commercial production.

Before the Second World War, however, probably the most widespread source of cash was labouring for wages. This was certainly so during the early years of colonial rule when men sought waged work in order to rebuild cattle herds. Men initially looked for work on mission stations or served as porters for the colonial government. They gradually increased their taking employment on nearby estates, where demand for labour was practically insatiable. They also joined road-building projects and many took part in the construction of the extension of the railroad from Moshi to Arusha in 1929.⁷¹

71 Interview with Mbarare Ngweera Kaaya, Nguruma village; Naiman Iyawe Kyungai and Robert Ndelekwa Kitomari, Singisi village.

To this day, there are ambiguous views as to the extent that the Meru participated in wagework on the estates. There is, for example, an idealisation by many local leaders claiming that the Meru refused to work on the estates and instead opted for earning cash incomes from sale of crops. This argument is partly supported by annual reports from the district giving evidence as to the difficulty for settlers to find local workers for their farms.⁷² Being primarily cattle raisers, male household heads in the beginning despised farm work, which they considered the task of women, and they felt ill at ease with the discipline and subjugation that wage labouring required. Some wealthy men, for example Sindato Pallangyo in Poli, forbade his sons to seek wage employment for such reasons in the 1920s.⁷³ Other household heads, however, sent their sons and children for wagework as a means of restoring and building their own wealth on cattle.

Information surfacing in interviews with elderly Meru and through the research of Nestor Luanda, a Tanzanian historian, gives support to the view that the Meru were extensively involved in wagework on the estates. The supply of local labour, however, was grossly inadequate and unreliable and during the coffee boom of the late 1920s it accounted for no more than a quarter of total labour requirements on the estates (Luanda, 1986,127).

Most of the local labour was casual and lowly paid, and was hired seasonally for weeding maize and pulses and for harvesting coffee and controlling coffee pests. To a great extent this labour was performed by women and children who in terms of labour costs were the cheapest ones to employ (ibid, 127ff). Part of the local labour force, however, predominately males and many of them Meru, performed skilled tasks in settler's coffee cultivation, such as nursing, pruning, planting and processing. They also worked as carpenters, masons, drivers, house-servants and supervisors (ibid, 131).⁷⁴

On the whole, working for the estates was widespread and common, particularly among people from villages neighbouring the estates.⁷⁵ According to several elderly Meru interviewed, wagework was the most important source of income before the general cultivation of coffee, since the income

72 This is also the position taken by Spear (1997,123ff), arguing that the Meru chose intensification and crop marketing instead of wage labouring on the estates.

73 Interview with Abraham Sindato Pallangyo, a son of Sindato.

74 One of the wealthiest persons in Singisi and the first one to build a modern brick house, Mzee Nicolous Karisia Kitomari, was a supervisor for most of his active life on one of the nearby estates.

that could be generated from the sale of ordinary crops was small. In addition, income from the sale of crops was to a great extent controlled by male household heads. For young men, wage labouring was a way of earning an independent income. It had largely replaced cattle raiding as a means of accumulating wealth and cattle in preparation for marriage. It often involved long, although temporary, absences from home.

There are several reasons why local labour was inadequate for the needs of the estates. In comparison with Kenya and Zimbabwe (South Rhodesia) where strong European settlements were established, the settler community in Arusha was relatively weak politically and divided along ethnic lines. While European farming consolidated in Rhodesia and Kenya during the First World War, it weakened in Arusha as German settlers were expelled and their properties were taken over by other Europeans with much less influence on the administration (Luanda, 1986). Administrating Tanganyika as a mandate under the League of Nations, the British were cautious about instituting too far reaching privileges for the European population (Bryceson, 1993,39). Unlike in Rhodesia and Kenya, land alienation in Arusha never dislocated local people and never forced them into proletarianisation and a marginal existence in reserve areas. And with the exception of a brief period of labour conscription during World War II, legislation never forced Africans into wagework for plantations (Luanda, 1986,2). Consequently, being left with the best agricultural land in the area, the Meru and the Arusha could choose between wage labouring and crop marketing and use both options to their advantage.

Effects of off-farm wagework on local farming

The most striking element in the history of estate employment is not the fact that many Meru individuals have raised cash from such work over the years, hence giving testimony to the significance of off-farm incomes in the domestic economy at an early stage during colonial rule. From the empirical evidence we can see that the Meru were involved in different kinds of work

75 Our survey of more than 400 household heads from villages bordering the estates revealed that 52 % of all male heads of more than 50 years of age had at any one time been employed in estate work.

tasks that required different levels of skills and rewards. We can also see that Meru society was economically stratified and that the type of off-farm work that was taken on by individuals reflected such inequalities. While some worked to improve their own condition or in preparation for marriage, others did so out of necessity, for food and shelter. And, while some men were able to perform skilled tasks that rendered them status and a reasonable payment, others – mainly women and children and unmarried men and poor people – worked as seasonal labourers in low paid, unskilled jobs and under quite difficult working and living conditions (Luanda, 1986,122ff).⁷⁶ Some Meru were squatting on settler estates hence constituting a cheap labour force for the landowner (ibid,132ff). The Meru largely resented this type of low status work, which represented a less attractive side of the settler community, and which to this day they continue to associate with exploitation and adverse feelings.

In terms of social, economic, and agrarian development in Meru, wage employment of the more skilled type played an indirect, but crucial role in the dissemination of farm improvements and for creating a local demand for 'modern' life styles. More important than the extra income was probably the fact that off-farm employment facilitated the spread and adoption of farm innovations. It also incurred new values and social norms and provided new means of wealth and social wellbeing. Some household heads took the lead in this process and distanced themselves from the rest. In this, their experience as workers on settler farms and elsewhere was an important background factor.

Market driven intensification of food crops. Settler and smallholder relations.

The demand for labour from settler estates and from public work projects was practically insatiable. Before long, large numbers of migrants from the central parts of the colony overtook the infrequent and insufficient supply

76 According to Mbarare Ngweera Kaaya, Nguruma village, and Emanuel Steven Kaaya, Nkoanrua village, such workers were nicknamed '*wanamba*' or '*manamba*', a kiswahili term for people who were only counted by their 'number' and not by their name, which was the settlers' way of handling local casual labourers.

of local workers. For the Meru, this large migrant labour force constituted an additional source of income. Many household heads extended their old exchange of crops for cattle with the Maasai to include sale of crops and beef for cash to migrant workers and to traders in the district (Spear, 1997, 123ff). Generally, the return from crop sales was higher than that from wage employment but it nevertheless did not replace the continued earning of cash income from wagework, partly because such incomes could be earned during slack periods in agriculture and by persons who due to young age or for other reasons had limited access to farm resources. While young men and poor people continued to seek wage employment, most household heads in a position of owning land and cattle were able to earn cash income from the sale of food crops.

The fact that the Meru and Arusha in 1916, 1917 and 1918 supplied the military troops with 50 tons of maize annually and still were left with a surplus is indicative of the entire colonial period.⁷⁷ The Meru (and the Arusha) for most years managed to generate a marketable surplus of food crops. While most settlers in the 1920s considered maize production unprofitable due to low prices and preferred to specialise in coffee and livestock production (beef) for export, the Meru and Arusha supplied domestic and local markets with food crops and beef (Luanda, 1986, 195ff). They sold their produce directly to workers as well as to Asian traders (*wanaduka*) in Arusha and elsewhere.⁷⁸ Production for sale rose steadily. Registered sales of native maize from the district rose from an average of 395 tons per year in the period 1931-35 to 2,122 tons in 1947-50, to 4,165 tons in 1951-55, and to 5,350 tons in 1956-59. For beans, the corresponding figures increased from 30 tons per year in 1930-34 to 532 tons in 1947-50, to 496 tons in 1951-55, and to 880 tons in 1956-59. Other marketable food crops, such as onions and sweet potatoes faced similar increases.⁷⁹

77 TNA 360/2952, note from District Commissioner in Arusha to the Director of the Department of Agriculture in Dar es Salaam, dated 1 July 1920.

78 TNA files: 69/242/1, *Marketing of Native and non-Native produce*; 9/15/Vol I-II, *Maize*; 69/63/AR, ADARs for 1940-49; ADM/9 District Books, note from Veterinary Officer, Northern Province to Department of Veterinary Science and Animal Husbandry, dated 10 June, 1939.

79 Sources: TNA, Files 69/AR/63 and 471/R.3 ADARs 1947-59; 9/4/6 Agricultural Officer's Monthly Reports. The average for 1930-35 includes settler production, see Spear (1997, Table 7.8, 138).

When transport improved with the completion of the railway line to Arusha in 1929, maize grown by smallholders was regularly railed out of Arusha to the market in Dar es Salaam and for export (Luanda, 1986,202ff). When the coffee market collapsed in 1930, settlers turned to mixed farming and in the process increased their production of maize for export (ibid,202ff). They were concerned about competition from African smallholders and petitioned unsuccessfully to colonial authorities for protection and support of the same kind that European grain producers received in Kenya (Bryceson, 1993,40). In general, however, settlers obtained a higher price for their crops than did the African smallholders. This was partly owing to their better sales organisation, transport facilities and negotiating power versus Asian traders (Luanda, 1986, 202ff).

During the Second World War, when the *laissez faire* pricing policy of the 1920s and 1930s shifted into market regulation, such price differentials were made official policy, particularly after 1942 when America joined the war. On the one hand, the government's objective was to keep prices for domestically consumed maize at a low level in order to forestall demands for salary increases among wageworkers. This objective was met through the strict issuing of trade licenses and price controls on wages and food staples. At the same time, there was an urgent need for increased food production in order to meet rising territorial demands for staples and to satisfy the demand for essential wartime goods (maize, wheat, beans, pyrethrum, timber and pawpaw) for military purposes and industrial requirements in Britain. The administration turned to settlers for this task, which made them recover from the losses inflicted on them by the depression. The government directed subsidies to settlers in the form of planting bonuses, minimum purchase prices, cheap loans, short term land leases, conscripted labour and by a two-tier pricing system that discriminated against African smallholders by granting a higher price for maize sold in bulk quantities (Luanda, 1986,210ff; Bryceson, 1993,38ff). Between 1946 and 1948, for example, European farmers in Tanganyika received £60,000 per year in subsidies (Bryceson, 1993,44).

Regulations lasted until the early 1950s, during which time the settlers overtook smallholders in maize production. The African smallholders were handicapped by the two-tier pricing system, by a lack of storage facilities for food crops, a poor market organisation and negotiating power, and by lack-

ing the kind of financial assistance forwarded to European growers (Luanda, 1986). In spite of these discriminatory factors, the Meru smallholders steadily increased their production of marketed maize and other food crops, as we have seen.

It should be noted that although the regulations and price controls helped settlers come out of the depression, these measures were never very efficient when it came to controlling the supply and price of local maize. Before 1942, imports of maize grown by subsidised European farmers in Kenya had threatened the profitability of Tanganyika settlers. The exclusive trading rights that during the war had been given to Asian trading companies by the Economic Control Board and later by the Grain Storage Department were constantly circumvented by non-licensed traders (Bryceson, 1993, 41ff). Parallel exchanges or 'black market sales' occurred between African smallholders and such traders. These circumstances rendered locally decided price levels quite inefficient, and they often resulted in higher prices paid to smallholders than to settlers who were compelled to sell to licensed traders and at appointed market sites (Bryceson, 1993, 46).⁸⁰

The specific and directed producer subsidies and regulations in the post-war period were linked to a policy of territorial self-sufficiency in food staples. Since early in the colonial period, Tanganyika had been facing a food deficit that was further hampered by fluctuating harvests and recurring famine conditions in the interior of the colony due to the climatic vagaries, a rudimentary road infrastructure and poor grain storage facilities. These problems partly also reflected the impoverishment that the interior of the colony suffered from as a result of colonial labour policies. The regulations and particularly the policy of the Grain Storage Department (GSD) were largely successful in raising overall food production. GSD was, however, increasingly under attack by employers who saw the declining trend for international grain prices and demanded cheaper food for their workers. In 1957, following the bumper harvest of 1955/56, all regulations were lifted

80 Wartime price regulations were generally considered inefficient. In his 1947 Annual Report, for example, the District Commissioner estimated that one third of the African maize crop was going to the black market. Sources: see previous footnote, and also TNA files 69/232/5, *Shortage of maize*, note from District Commissioner, Arusha to Provincial Commissioner regarding the difficulty of controlling price of smallholder grown maize, dated 23rd December 1942; and 69/239/58, *Notes on report on select committee on food production prices and subsidisation*, dated 6th December, 1946.

and for a period of six years, until famine conditions once again prompted government intervention, Tanganyika experienced entirely liberalised markets for food staples (Bryceson, 1993, 47-53).

The period up to World War II can perhaps best be summarised as one in which the colonial authorities took a rather passive attitude towards smallholder farming. Their initial strategy of using the native population on Mount Meru as labourers for the estates had largely failed. Subsequent policies were not outright discriminating against African smallholder agriculture but on the other hand were not very supportive either. The political thrust of the German settler community lost momentum during World War I and never fully recovered thereafter. Save for land allocations, settlers did not receive any direct support from the government until World War II. For example, the administration did not respond to settlers' desperate pleas for assistance during the economic depression when many of them went bankrupt and abandoned their estates (Luanda, 1987,316).

Direct subsidies to settler farms during the war period and after helped settlers recover from the depression, but this support was primarily a result of wartime conditions rather than of settlers' political strength (Luanda, 1986). During this period, discrimination against African producers was direct and obvious. Indirectly, however, the administration had supported settler agriculture throughout the entire colonial period. This was not least the case of land policies (Chapter Four). The administration also institutionalised labour migration, which provided cheap labour for European farms (Egerö, 1974). Also, agricultural research, extension services, infrastructure investments etc. were all oriented towards or exclusively directed to the development of European owned large-scale farms and did not consider the potential of smallholder farming until the 1950s (Luanda, 1986; Ruthenberg, 1964, 45ff).

Coffee cultivation

In spite of incomes gained from wage labour and sale of food crops, it was primarily through the cultivation of coffee that per capita incomes could rise well into the 1970s. Incomes rose particularly rapidly in the 1950s and 1960s following the producer cooperative formed by the Meru in 1955.

Coffee was at the base of social and economic development on the mountain for most of the period 1950-80 and enabled living standards to increase despite a rapidly growing population. According to Spear (1997,146), coffee yields increased from 0.1 tons/acre in 1929, to 0.2 tons in 1949, to 0.7 tons in 1969 and to 1.2 tons/acre in the late 1970s. Although these estimates appear to be inflated, there is no doubt that productivity and incomes from coffee rose considerably until at least 1980.⁸¹ In Table 8.1 production totals for Arusha/Arumeru District are given. Both the Meru and the Arusha took up coffee cultivation in the 1920s, but in spite of their smaller population, the Meru were throughout the colonial period ahead of the Arusha in terms of relative numbers of growers and total acreage and yields.

81 It has not been possible to verify from any other source the high levels of productivity stated by Spear. Area estimates are normally arrived at through a standard count of trees (1,330 trees/ha) but are notoriously fluctuating in official statistics. In a World Bank-Tanzania government joint report of 1994, a yield of 900 kg/ha (about 360kg/acre) was considered as a standard high yield. In a comparison of yields from major coffee growing regions in the country for 1972/73, 1981/82 and 1991/92, presented in the same study, average yield in no case exceeded 218 kg/acre (World Bank, 1994a, 241-42). Coffee crop *estimates* compiled at the Agricultural and Livestock Office in Arumeru for the ten-year period 1985-1995 fluctuated between 182 and 211 kg/acre. In Singisi, only 15 per cent of sampled farmers delivered an average yield exceeding 300 kg coffee/acre to the cooperative society in the period 1989-95 (source: author's survey 1995 and records at Singisi primary society). It seems unlikely that *average* yields under the best of circumstances in the 1960s and 1970s exceeded say 500 kg/acre.

Table 8.1: *Mean annual total coffee production per 5-year period in Arusha/Arumeru District. Total number of Meru coffee growers at end of five-year period.*⁸²

Year	1925-30	1931-35	1936-40	1941-45	1946-50	1951-55	1956-60
Mean annual production (tons)	28	61	89	119	238	262	790
No. of Meru growers	324	-	807*	-	2,335	3,000	3,900
Year	1961-65	1966-70	1971-75	1976-80	1981-85	1986-90	1991-95
Mean annual production (tons)	1,973	2,549	4,216	4,908*	4,800*	5,514	4,871
No. of Meru growers	6,603	-	-	-	-	-	-

*1938. ** Regional recordings 1978-80, 1981-85.

Sources: 1925-39: TNA file 9/6/5, *Native Coffee Growing*, Report by Agricultural Officer, T.C. Cairns, to District Officer, Arusha, dated 14th June, 1940. 1947-59: TNA, Files 69/AR/63 and 471/R.3 ADARs for 1947-59; 9/4/6 Agricultural Officer's Monthly Reports. 1940-46 and 1960-75: various TNA files cited in Spear (1997,141). 1976-85: United Republic of Tanzania (1990, Table 3.9, regional data). 1986-95: Production estimates based on records at Regional Office, Arusha (obtained through Mr Swai, former Atusha Region Coffee Officer, personal communication via Jehova Roy Kaaya).

The Meru, however, adopted coffee cultivation much later than the Chaga. Luanda (1986,152ff) argues that there were a variety of reasons for this. In Meru culture, males were predominately preoccupied with cattle and they looked at agricultural innovations with scepticism. When coffee eventually got a hold in Meru it was through people who were social outcasts, i.e. Christian converts. Geographically, the Arusha area was colonised later than Kilimanjaro where smallholders had taken up coffee cultivation before the year 1900. The Arusha area also suffered from difficult road conditions and heavy marketing and transport costs beleaguered cash crop production until completion of the railroad in 1929. In addition, both the Arusha and the Meru had poor marketing and producer organisations and well into the 1940s, both production and marketing were done on an individual basis and in a haphazard manner. Finally, until mid-1930s settlers fiercely opposed African coffee cultivation.

82 It should be noted that official statistics are notoriously uncertain. The nationalisation of cooperatives in 1976 and their restructuring again in 1984 put filing systems and archives at Arusha Cooperative Union in disarray making it difficult to get hold of reliable production data for the district level and below, especially for the period 1976-84.

When in spite of these difficulties, the Meru in the 1920s and 1930s increased coffee cultivation, settlers lobbied extensively against it on the pretext that the natives would steal coffee, market an inferior crop and spread coffee disease to settler farms, while in reality they were concerned about competition and availability of local labour (Luanda, 1986,195ff; Spear, 1997,139). While in the beginning, the authorities sided with the settlers in order to restrict native coffee cultivation, in 1932/33 they accepted the inevitable: that the Meru had adopted coffee cultivation and were prospering from the move. Government actions thereafter concentrated on controlling coffee disease, first in African plantations and then increasingly on settler estates where due to the depression neglected coffee trees served as host trees for the feared coffee borer (Luanda, 1986,202ff).

The administration remained divided, however, along lines that resemble the classical debate on population growth and food supply. While some officers considered coffee cultivation the most natural step to take in order to increase the value output from the land, others saw it as being in conflict with the rising food needs of a growing population and recommended instead that shrinking mountain plots should be used for food crop cultivation (Spear, 1997,142-3).

Although empirical evidence is scanty and full time series are lacking, it cautiously suggests that the mountain smallholders in spite of mixing coffee with other crops were more efficient than the settlers in terms of production per acre.⁸³ We should, of course, embark on such comparisons with great caution, not least because of 'endemic' errors in official crop statistics and the difficulties involved in measuring smallholder acreage under coffee due to the common interplanting of crops. The higher efficiency of African

83 In 1934, native farmers produced 50 tons of coffee on 800 acres (62.5 kgs/acre) while settlers produced 800 tons on 12,500 acres (64 kgs/acre) (TNA: Blue Book Crop Estimates 1934). In 1947-49, production per acre was to the advantage of smallholders. For smallholders, it was 162 kgs/acre in 1947, 174 kgs/acre in 1948 and 169 kgs/acre in 1949. For estates, the corresponding figures were 89 kgs/acre in 1947, 133 kgs/acre in 1948 and 81 kgs/acre in 1949 (TNA: Arusha District Book). More recent data from the Marketing Development Bureau are less conclusive, however. In 1972/73 smallholders in northern Tanzania produced 300 kg/ha while estate production was 918 kg/ha. In 1981/82, it was 444 kg/ha for smallholders and 368 kg/ha for estates, and in 1991/92 it was 195 kg/ha and 200 kg/ha, respectively. These estimates should be viewed cautiously, especially since the land under estate coffee is assumed constant at 12,200 ha during this 20-year period (World Bank, 1994a, Table 241)

growers is not unrealistic, however, given the fact that well into the 1940s, the settler coffee industry in Arusha depended heavily on cheap but unskilled and often unmotivated labourers living under difficult conditions. There was virtually no mechanisation and the introduction of chemical spraying in mid 1930s did only marginally decrease the heavy reliance on labour in all components of coffee growing. For most settlers, labour costs and living expenses in relation to migrant labour amounted to between 50 and 80 per cent of total annual production costs. Labour shortages were chronic and the standard of workers' performance "deplorable" (Luanda, 1986,143,146ff).

In contrast, Meru smallholders grew coffee with a flexible and motivated domestic labour force. Coffee was extremely well suited for smallholder cultivation, being labour intensive and easy to integrate into the existing mixed farming system. Throughout the 1930s, the Meru and the Arusha expanded coffee cultivation in spite of low prices. They relied on family labour and ensured a sufficient supply of food by interplanting coffee with bananas and other crops. Settlers, on the other hand, faced difficult times as world market prices collapsed and as years of drought cut production further. Many went bankrupt, laid off their labour force, abandoned their farms or left their coffee in a state of neglect (Spear, 1997,142; Luanda, 1986,202ff).

Smallholders consistently obtained lower producer prices for their coffee compared to what settlers received. Lacking their own marketing channels, individual Meru sold their coffee in the 1920s directly to settlers, often at prices well below the market price (Luanda, 1986,162). Due to high marketing and transport costs they received 30-35 per cent less payment than did the smallholders on Kilimanjaro. The situation improved somewhat with the completion of the railway line to Arusha in 1929, but a poor market organisation continued to keep producer prices below those paid to settlers. An attempt by the Meru Coffee Growers Association in 1929 to sell directly to the London market failed. Thereafter, they sold their crop to local traders on a tender basis, but did not manage to negotiate a price at level with that of settlers until they established their own producer cooperative in the 1950s (Spear, 1997,142, 158ff; Luanda, 1986,144-5,163).

The coffee cooperative

The formation of indigenous farmer cooperatives by smallholders were common in Tanganyika in the 1950s following the British post-war policy of developing the colony through increased African participation in commercial farming. African cooperatives served to balance European settler dominance in export crop production and to challenge Asian dominance in the trade of crops (Bryceson, 1993, 52ff). In most cases these strategies received the official backing of the government. The motives behind the Meru coffee cooperative were partly different, however, since it was created in an atmosphere of frosty relations between the Meru and the British due to the Meru Land Case culminating in 1951.⁸⁴ Consequently, the Meru cooperative to a great extent reflected the genuine will by the Meru to develop their society on their own terms and with a minimum of interference by the colonial administration. The Meru's decision to hire external expertise for building a coffee-producer cooperative should be seen in this light.

In 1955, the Meru Coffee Growers Association was made into the Meru Coffee Growers Cooperative Society Ltd with the assistance of an American economic advisor, Anton Nelson. Kirilo Japhet, a Meru activist during the Meru Land Case and the son of one of the first coffee growers in Meru, Japhet Nkuru, had met with Nelson in New York in 1952 when petitioning the Land Case for the Trusteeship Council of the United Nations (Japhet and Seaton, 1967; Nelson, 1967).⁸⁵ Nelson agreed to come to Meru and assist in the organisation of the cooperative.

The cooperative had a radical effect on coffee production and incomes in Meru. It improved both the quality and quantity of coffee yields, and the producer price increased as the cooperative could market the crop without paying commission to middle traders. Through members' collective deductions on coffee incomes, the cooperative initiated and financed much of the social and infrastructure development that took place in Meru in the 1950s and 1960s. Coffee paid for road building and schools, for modern farm implements in coffee and farm production, for the building of a coffee factory

84 The Meru had developed a complete distrust in the British administration as a result of the Meru Land Case. TNA files: TNA 471/R.3/I, ADAR for 1955, dated 1st February, 1956.

85 Interview: Kirilo Japhet, 1995. Kirilo Japhet died in 1998.

in Ngyani, for the introduction of high grade dairy cattle, for providing farmers with credits and saving accounts, and for sending them on study tours. Coffee also financed the travel to America of Peter Pallangyo, the first Meru to obtain a university degree. It was also contributions by coffee farmers that raised part of the funds needed for the repurchase of bankrupt or abandoned settler estates. This included farms in the Ngare Nanyuki area that had been lost in the eviction of 1951 (Nelson, 1967).

Spread and adoption of farm innovations

There is no doubt that the cooperative movement played a decisive role in raising overall farm productivity after 1950. It helped spread improved farming methods and rendered market production, and especially coffee production, the kind of modern organisational and institutional structure it had hitherto been lacking. This was in turn an effect of the Meru's growing social and political awareness and more frequent interaction with the surrounding world, a circumstance that had contributed to alter the aspirations and referential frameworks of leading coffee growers. The improved educational level of individual Meru also contributed to this change.

As far back in Meru history as we can trace important events, external contacts have been crucial for the local adoption of farm innovations. In fact, it is difficult to point to any productivity-raising innovation in Meru agriculture that have come about from an entirely indigenous experimentation. Crucial improvements stem from Kilimanjaro, giving evidence to the early and close contacts in the form of trade and intermarriage between the Meru and their Chaga neighbours.

Also from Kilimanjaro came the technique of building irrigation channels. The Meru had made primitive constructions for domestic water delivery at an early stage, but it was through importation of Chaga expertise that channel building and irrigation came into general use towards the end of the 19th century during the rule of the Ufalala age set. Then, the main purpose was to prolong growing seasons and to prevent crop failures from drought. Later on, as the per capita size of holdings declined and water provision became crucial for maintaining a high and stable level of crop yields, more

complex network of channels emerged that were supervised and maintained by local water committees.⁸⁶

Iron tools had come to Meru through Arab caravan traders already in the late 19th century but did not come into every day use.⁸⁷ Iron tools also drifted into Meru from Kilimanjaro with Chaga workers, who were well known for their skills as blacksmiths. They also appeared in the forced public work projects launched by the Germans early in the 1900s (Luanda, 1986). In spite of these events, it was not until at least the 1920s that the digging stick made from hardwood was commonly replaced by the iron hoe. From then on, iron tools in the form of hoes, pangas (machetes) and axes began to spread as they were sold in the area by Indian and Arab traders.⁸⁸ Also in the 1920s, the Meru learned from white settlers how to use the plough and during the following decades it was adopted for cultivation of food crops on the upper mountain reaches and on the plains.⁸⁹

While population growth constituted a constant undercurrent of change necessitating a constantly rising production per acre in order to keep food production and incomes at pace with population size, it was market demand that drove family heads to increase production beyond mere subsistence levels. Behind this were growing aspirations of improved living conditions and power articulated by individual Meru. The entrepreneurial spirit of these individuals made them try out new crop varieties, methods of cultivation, and other agricultural innovations they had come to know through external con-

86 Siringe Suya Sumari from Nkoanrua village was among the Meru who learned the skill of building channels in Kilimanjaro towards the end of the 19th century. Upon returning to Meru, he organised the construction of a still operating channel from the river Nduruma. In Akheri, Nguruma and Poli, wealthy lineage elders imported Chaga workers to lay out irrigation channels. The Chagas were rewarded with livestock and plenty of food. In Akheri and Poli, channels were dug before the arrival of the Germans, while in Nguruma, the first feeder channel was made in the 1920s. In Singisi, the first channels were dug shortly before 1900 as members of the Manang clan from Kilimanjaro settled in the village. Most of the present channels in Singisi were built in the period 1910-1940 and then on the initiative of settlers who were in need of more water (interviews with Akundael Isa Sumari, Nkoanrua village, Mbarare Ngweera Kaaya, Nguruma village, Abraham Sindato Pallangyo, Poli village, and Robert Ndelekwa Kitomari, Singisi village).

87 Interview: Abraham Sindato Pallangyo, Poli village.

88 Interview: Naiman Iyawe Kyungai, Singisi village.

89 Among the first to adopt iron ploughs in Singisi were Karisia Lengisho Kitomari, Nsuwe Kirasi Pallangyo and Ngoe Menyali Kitomari. This occurred towards the end of the 1920s, according to Naiman Iyawe Kyungai, interviewed in 1996.

tacts and travel. Often, such entrepreneurship and experimentation represented norm-breaking behaviours that challenged existing structures of authority and custom. In no case is this clearer than in the way coffee spread across the mountain.

The coffee farmers

In the 1910s and early 1920s some members of the Ultareto and Kisali age set had begun to experiment with new crops and farming techniques that they had learned from settlers and missionaries. Lutheran missionaries had introduced coffee at their station at Nkoaranga already in 1902⁹⁰ and the first settlers to grow coffee appeared shortly thereafter. The first record of Meru coffee cultivation goes back to about 1912 when a small group of farmers from Akheri village planted seedlings they had 'stolen' from the Maharage estate where they were working. Threatened with a jail sentence for their initiative, they uprooted their coffee. One of them, Abiya Meero Ayo, attempted cultivation again in 1923, now with seedlings obtained from the missionaries' nursery at Makumira. He registered 400 coffee trees in 1926 (Luanda, 1986,154-5).

Throughout the 1920s, the missionaries encouraged indigenous coffee cultivation and coffee became the landmark of many early Christian converts whose religious affiliation and strange manners were rejected by 'ordinary' people.⁹¹ It was the sons of these and other early converts, however, who rose as full-blown commercial farmers and acquired large holdings on the plains in order to supplement their coffee farms. They also assumed leading positions in modern institutions like the church, the cooperative, the TANU party and the government administration. Sangito Luka, for example, the son of Luka Usaka, continued in the footsteps of his father by rising to be a prominent fellow in the cooperative movement. Apart from being a successful coffee farmer, he was among the first Meru to own a tractor and take on large-scale production of maize on the plains in the 1950s.

While Christianity and basic education had broadened the views of the early converts, white settlers and other Europeans set examples for the activ-

⁹⁰ An early report by a missionary on the progress with the Mission at Nkoaranga contains a map from 1903 showing two small coffee gardens (Krause, 1904).

ities of their sons and of other entrepreneurial Meru. Settler estates bordered Meru villages and activities going on there could easily be observed and copied on smallholder farms. In Singisi, half of the leading coffee growers emerging in the 1950s and 1960s had a past as workers on the neighbouring estates, frequently in supervisory positions.⁹² By working for estate farmers, some young Meru saw the advanced farming and comfortable life of Europeans, and they realised the potential of commercial farming. Back in the village, they tried to improve their own condition along similar lines. In the words of Sangito Luka, interviewed in 1995: *"those who involved themselves in coffee learned from the missionaries and from the settlers. They fought to be equal to white people."*

Rather than investing in cattle and marrying wives like most of their age mates, the Christian coffee farmers used their incomes to improve their farms, they budgeted their time, labour and income, they educated their children, built stone houses, etc. And they set out to increase their land holdings by purchasing land from their fellow clansmen and age mates at a time when most people had not yet realised that land in the future would become a scarce resource.

91 Among the first Meru growers were Matayo Leveria Kaaya, Luka Usaka Kaaya, Yohana Ndosu and Japhet Nkuru Ayo, who received seedlings from the missionaries in the 1920s (Interviews in 1995 with Sangito Luka and Kirilo Japhet, sons of Luka Usaka and Japhet Nkuru). See also Luanda (1986,157-8), Mbise (1973), and Spear (1995,163-4). Luka had 14 acres planted with coffee on land he had purchased in present Nguruma village and he was among the first people in Meru to build a stone house. Unlike most coffee growers at the time, he devoted a lot of energy to developing his coffee farm to modern standards. He purchased a hand driven coffee pulper in 1925 and harvested 20 bags of coffee using hired labourers (Luanda, 1986,155). Luka was also among the leaders of the first coffee association in Meru formed in 1928 (interview with Sangito Luka, 1995). See also Spear (1995,163) and Luanda (1986,155). In Singisi, Abaineto Menyali Kitomari, Seth Njere Akyoo, and Philipo Neeko Kitomari were among those who introduced coffee in the early 1930s. They were all baptised and had received training and basic education at the Nkoaranga mission (Interviews: Naiman Iyawe and Jeremia Philipo, Singisi village).

92 We asked two prominent coffee growers in Singisi to list those farmers who had acquired dominant positions as coffee growers in the village in the 1950s and 60s. Out of 17 names, 9 had a past as estate workers, and 3 had participated in the Second World War. The same pattern was confirmed for other villages through interviews there, some respondents adding that many coffee growers were men who had travelled widely and in this process received ideas and knowledge that put them at advantage over others. Contacts with Europeans created a business attitude in farming and an appetite for modern life among many Meru.

In the new situation of colonial rule, the education offered by missionaries proved to be a means of individual prosperity, although material wealth as such was hardly in the minds of the first converts. Their motives for establishing contact with the missionaries were perhaps as many as the converts themselves. Some were driven by curiosity, their contacts often being made against the outright will of their families who treated them as outcasts. Others approached the mission in order to avoid forced labour demanded by the Chief. At other times, parents supported the initiative and education of their sons. The small cash the boarding students received at the mission was welcomed at their homesteads since in those days little money could buy a bull (Mbise, 1973, 30).

The fact that the sons of the early converts learned and adopted new farming techniques from European settlers followed naturally from their education and Western orientation. To a great extent their success depended on personal attitude and inclination, much in the way courage and skill had made some men of preceding generations acquire herds of cattle. Commercial farming and employment constituted new inroads to material wealth that gave entrepreneurs and those with education good housing, clothing, and food. The missions provided the education needed to succeed in a world where Europeans had defined the rules of operation. Christianity served as the moral basis for the converts' Western orientation, which at least in the beginning was rejected by the elders and the tradition bound majority.

Many of the leading coffee growers were also in the front line of other farm innovations. The first graded dairy cattle introduced in Meru, for example, came to the northeastern part of the coffee-belt in the early 1950s by Meru being employed on some of the European dairy farms established in the nearby Ngare Nanyuki area following the Meru Land Case.⁹³ While European large-scale dairy farming met with difficulties of profitability, small-scale dairy farming helped the Meru improve further the productivity of the mixed farming system they were practising. One 'modern' cow (*'ngombe ya kisasa'*) could produce the same amount as four indigenous zebu cows, or on average 1,800 litres per year versus 400 litres (Laurent and Centres,

93 Interview Jonathan Eliahu, Kyuta subvillage, Mulala, whose father Eliahu Nassari was among the first people to bring graded dairy cows to the village. Eliahu had travelled widely and worked for white settlers and came back to his village with new ideas.

nd,18).⁹⁴ It was not until the 1960s, however, that graded dairy cows and crossbreeds began to spread more commonly, their introduction being facilitated by the contacts individual Meru had with settlers and by the initiatives taken by the coffee cooperative to import graded cows from Kenya (Carlsson, 1996, 13ff). And when market demand for fresh milk rose in Arusha town in the 1980s, the last zebu cattle on the mountain disappeared. Today, virtually every cow on the mountain is a graded or a crossbreed one.



Photograph 8.1: An elderly Singisi farmer picking coffee with his grandchildren.

Expansion of off-farm opportunities

The 1950s also meant an increase of employment and income opportunities outside agriculture. With increased production for the market, with improved educational levels and programs for social services and development,

⁹⁴ A woman farmer in Poli explained that 50 years ago her family took four cows for grazing to the estates south of the village. These cows could not give as much milk as one graded cow does today.

growing demand for consumer goods etc., new institutions and organisations emerged that required skills outside farming. A range of new opportunities were opened up which complemented the earlier limited options of off-farm incomes in the form of predominately manual, low skilled jobs on settler estates.

The cooperative movement had increased participation in crop marketing and transport by African smallholders. In Meru, some entrepreneurial farmers responded to the increased need for transportation of crops, building material and people. Others became entrepreneurs in the construction sector or developed their skills as artisans through jobs as carpenters, masons etc. Still others were employed in administration working as clerks, nurses, teachers and so on, or performed various salaried service functions in the cooperative movement.

Access to good salaried jobs was dependent on education. Before 1950, missionaries had provided virtually all education in Meru. As the number of Native Authority schools increased in the 1950s, more and more people gained education and were able to seek complementary livelihoods outside farming. With coffee income, a family head could give his children (sons) education so as to ensure the family's foothold in the off-farm economy. In this way, incomes from coffee had a cumulative and reinforcing effect on the level of incomes. As we will discuss in more detail later, a number of prosperous lineages emerged during this time. Coffee incomes enabled entrepreneurial household heads to draw on incomes in the off-farm sector by letting educated sons obtain high salaried jobs in the private or expanding public sector.

Summarising the colonial period, it should be evident that household members' external contacts and experiences in the form of off-farm wage-work and education had a catalysing effect on the adoption of income raising innovations in agriculture. Population growth determined broad and general changes of land use, such as the clearing of forest into grazing lands and the change of grazing lands into fields for cultivation. These transformations enabled the Meru to maintain a production of staple food crops that was apace with population growth. It was market demand, associated with fundamental political and economic changes during the early colonial period, however, that drove land use intensification to levels that implied rising per capita incomes for the population as a whole. Spearheading this

development were the Christian coffee farmers. Initially, their Western inclination, off-farm experiences, economic orientation and appetite for material improvements put them at odds with the majority of Meru. In the end, they demonstrated that cash-crop farming was an efficient way of raising income levels and living standards generally in Meru.

Post-independence trends in local cash-crop agriculture. From exports to domestic markets

Introduction

We now move over to the post-independence period, beginning in this chapter with a documentation of the agricultural changes that have taken place after the upswing for coffee cultivation in the 1950s and 1960s. We will particularly focus on the subsequent decline of coffee incomes, and on the growing importance of dairy farming and vegetable cultivation for domestic urban markets since the onset of the national economic crisis in the late 1970s. These changes should be seen against the background of an increasing scarcity of land, as we outlined in Part I, and against the radical shifts in economic and political orientation that occurred in Tanzania during this period. Before looking at the agricultural situation, these background developments and their broad implications will be outlined below.

From development optimism to crisis and beyond

On Mount Meru, the 25- or 30-year period from 1950 to the late 1970s was one of development optimism, of rising per capita incomes, of social progress and continuously improved living standards in spite of rapid pop-

ulation growth. As coffee incomes made it possible for farmers to send their children to school and to buy modern building materials for their homes, educational levels and housing standards improved. In 1953 a new tarmac road had been built north of the railway line between Arusha and Usa River. Next to the new road, at Tengeru, a small township emerged following the establishment there of a new market centre, a district hospital, a primary school and a teachers' training college, as well as agricultural and livestock training institutes. After independence, general and free access to primary education and health care was introduced. Piped water to village taps, and electricity and telephone lines serving the villages on the lower mountain slopes were built in the early 1970s.

While in the colonial period, virtually all extension support had been directed to settler agriculture, after independence, smallholders' participation in the market was given central attention. Artificial fertilisers and other farm chemicals, high yielding seed varieties, farm machinery, and up-graded dairy cows were introduced, either through the coffee cooperative, through government extension, or by individual farmers. As a result, production of both export crops and food staples rose to new record levels. Favourable world market prices for coffee and other cash crops and a supportive policy framework for food crops through expanded extension and input supply services provided by the government and channelled through the cooperatives contributed positively towards this end.

Parallel to rising farm incomes, employment opportunities in the expanding public and private sectors contributed to increase overall wellbeing on the mountain. In most cases, off-farm incomes were complementary to the mixed farming economy that already contained a variety of (farm) income sources. Some Meru men (and a few women), however, were drawn into urban jobs that implied a change of occupation and residence on a 'permanent' basis.

From the mid 1970s onwards, however, many of the positive trends seen in the preceding decades were broken as the Tanzanian national economy went into a deep recession due to a combination of international and internal factors. Central political control of the local economy, far reaching state regulations of markets and the state being the monopoly buyer of crops and supplier of inputs, high direct and indirect taxation of producers, endemic shortages of consumer goods etc., were causes and indicators of an economic

crisis that negatively affected incomes of rural households all over the country.

From the mid-1980s, the Tanzanian government embarked on a program for economic restructuring demanded by the IMF and the World Bank. In the social and public sector, structural adjustment has implied that households now pay for education and health services that used to be free. In the agricultural sector, there has been a removal of all subsidies for inputs and a stop for the deficit funding of parastatals dealing with crop purchases. From the early 1990s, parastatal companies have gradually become fully exposed to competition from private traders and transporters. In 1996/97, there was a massive retrenchment of employees at the Ministry of Agriculture, cutting the field extension staff force by half in Arumeru District.⁹⁵

All these shifts in policy aside, it can be argued that the Meru have managed the crisis and the changes under structural adjustment comparatively well. The main losers have been people who depend on a government salary for their livelihood or who have been unable to adapt to the new market requirements. In terms of food provision, the Meru were in most cases able to rely on a complementary production of maize, beans, milk and bananas for subsistence.

Proximity to Kenya and Arusha, the tourist gateway into the game circuit in Northern Tanzania, also meant that a stream of consumer goods trickled into Meru during the years of crisis and that the opportunity of earning off-farm incomes never dried up completely. In fact, illicit activities such as cross-border crop sales, dollar exchange and smuggling of consumer goods, sale of crops on domestic parallel markets as well as various off-farm activities in the informal sector constituted lifelines for many people and in some cases contributed to build individual fortunes in the years of crisis.

Despite the fact that the Meru did quite well in terms of food provisioning, the 1980s are by most people regarded as a decade when the good times shifted into increasing hardships. Many Meru look at the 1950s and 1960s with nostalgia! This was a time when land and food was abundant and a father could send his children to school by reaping the coffee from his sham-

95 Interviews: Mr D.M. Rugangila, District Agriculture and Livestock Development Officer (DALDO), January 1997, and Ms Mongi, District Extension Officer (DEO), November, 1998. At the later date, there were 108 field extension workers in the district compared to about 200 a few years earlier.

ba. Since then, life has become a struggle, food has to be bought at the market, everything costs money, and in spite of working harder, incomes do not suffice to meet domestic needs. And above all, land has become critically scarce.

The declining role of coffee

Although still important, coffee has lost much of its former splendour. One reason is the worsening terms of trade for coffee since 1980, reflecting declining world market prices, political interventions and indirect taxation by the Tanzanian Coffee Board (TCB). Expressed in 1985 prices, producer prices in Meru decreased in the late 1970s and then remained fairly constant throughout the 1980s at 50-70 % of the price received in 1977. Real price rose in 1993, peaked in 1994 following frost in Brazil, remained high until 1997 and dropped thereafter, reaching its lowest value in 2000 when the price was 40 per cent of the one in 1977 (Table 9.1).

Table 9.1: *Current and real coffee producer price per kg Mild Arabica (parchment) 1977-2000 (in 1985 year's prices)*

Year	1977	1978	1979	1980	1981	1982	1983	1984
Current price (TSh)	10.9	9.1	11.4	12.4	13.9	15.2	22.9	29.7
NCPI (1985=1)	0.16	0.18	0.21	0.27	0.34	0.43	0.55	0.75
<i>Real price (TSh)</i>	<i>68.1</i>	<i>50.6</i>	<i>54.3</i>	<i>45.9</i>	<i>40.9</i>	<i>35.3</i>	<i>41.6</i>	<i>39.6</i>
Year	1985	1986	1987	1988	1989	1990	1991	1992
Current price (TSh)	45.8	62.4	66.0	90.0	126.0	155.0	230.0	220.0
NCPI (1985=1)	1.00	1.32	1.72	2.26	2.84	3.40	4.16	5.08
<i>Real price (TSh)</i>	<i>45.8</i>	<i>47.3</i>	<i>38.4</i>	<i>39.8</i>	<i>44.4</i>	<i>45.6</i>	<i>55.3</i>	<i>43.3</i>
Year	1993	1994	1995	1996	1997	1998	1999	2000
Current price (TSh)	420.0	820.0	750.0	1,200.0	1,400.0	1,100.0	750.0	550.0
NCPI (1985=1)	6.36	8.47	10.87	13.15	15.27	17.22	18.58	19.73
<i>Real price (TSh)</i>	<i>66.0</i>	<i>96.8</i>	<i>73.6</i>	<i>91.3</i>	<i>91.7</i>	<i>63.9</i>	<i>40.4</i>	<i>27.9</i>

Sources: 1977-87: Bagachwa (1995, Appendix, Table 5), prices being country averages; 1988-2000: Arusha Cooperative Union (ACU) records on average producer price (n.d.). NCPI for 1993-2000 is recalculated from 1994 index=100 for mainland Tanzania according to the Bank of Tanzania home page: http://www.bot-tz.org/Statistics/qreviews/table1_18.htm and http://www.bot-tz.org/Statistics/qreviews/table1_21.htm, downloaded in April, 2001.

It should be noted that price trends after 1994, especially, are difficult to interpret and that sources of data are inconsistent.⁹⁶ Prices in the Table are based on official Arusha Cooperative Union (ACU) records, which also contain average prices offered by private buyers. In Meru, private buyers appeared in 1994 and gained a large market share from 1996. With private buyers, there is no retrospective adjustment of the producer price after the coffee auction has been held in Moshi. Coffee is paid on the spot, the price reflecting seasonal and international supply factors, competition between local traders and expectations about the auction price. In 1997, for example, the price offered by private buyers fluctuated between 700 and 1,400 TSh per kg. Given these fluctuations, it is likely that the actual price obtained by farmers after 1994 is lower than what is indicated in the Table.

What is not seen in Table 9.1 is the fact that in the early 1990s, economic liberalisation brought a dramatic increase in prices for farm inputs, e.g. fertilisers, insecticides, fungicides etc. The cost for these essential inputs has narrowed the profitability of coffee cultivation. The varieties of Arabica used in Meru were introduced in the 1950s and 1960s and recommended for their superior yield and quality. They are, however, susceptible to coffee leaf rust and coffee berry disease. Coffee berry disease appeared in 1975 and spread quickly to Arabica stands all over the country. In the 1970s and 1980s donors provided supplies of fungicides at subsidised prices and annual programs of spraying were administered through the cooperatives. Since 1992, however, farmers have to pay the full market price for all chemical inputs and the use of fungicides has declined considerably with increased incidence of diseases on the coffee. According to the World Bank (WB), fungicides amounted to 25 per cent of direct production costs in 1994 (World Bank, 1994a, 122).

The development of the price for chemical fertiliser provides another illustration of the change in policy. The price for a 50 kg bag of Urea fertiliser, for example, rose from 497 TSh in 1988 when subsidies began to be phased out, to 11,000 TSh in 2000, this leap representing a near threefold increase in real prices. The price for common fungicides and pesticides show

96 For a comparison, see for example country level data supplied by the Ministry of Agriculture and Cooperatives (MAC) on the evolution of real producer prices (World Bank, 2000, Table 3.7, 33). These show a more favourable development than the local data displayed in Table 9.1.

even more drastic increases. One kg of Red Copper fungicide rose from 70 Tsh to 2,800 TSh within this period, a near fivefold increase in real prices. Thiodam pesticide has had a similar development, rising from 289 TSh to 11,500 TSh per kg, also this a fivefold increase in real terms.⁹⁷

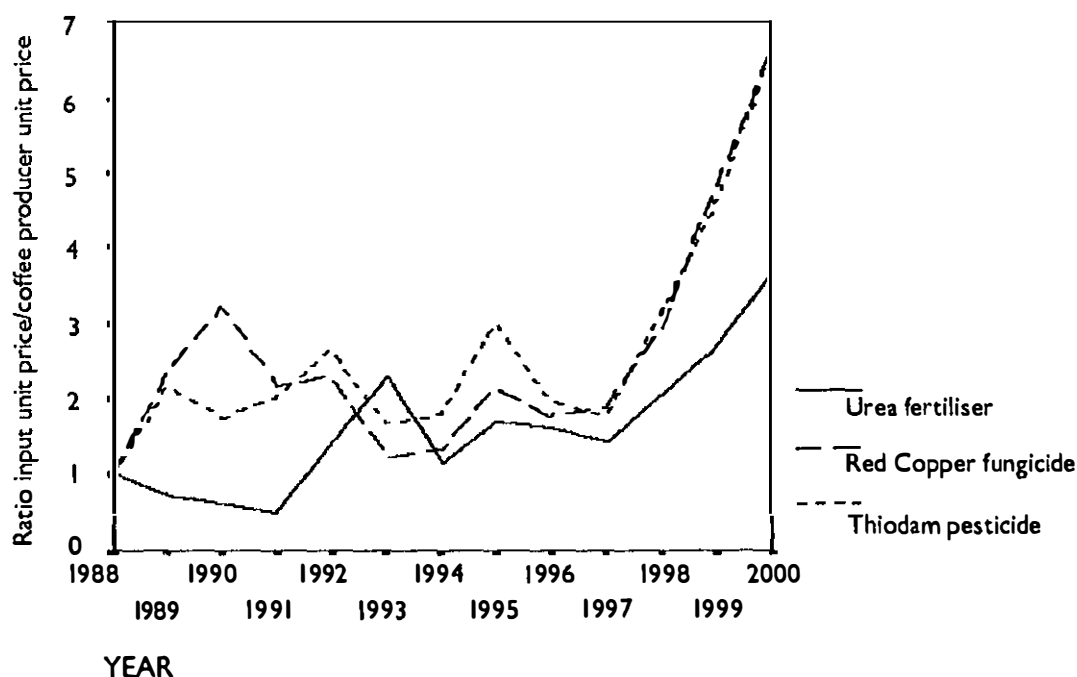
It can be argued that coffee is mostly fertilised through application of animal manure and compost, but even so chemical fertiliser constitutes an important complement for improving coffee yields. In the household survey, 21 per cent of coffee farmers reported that they had applied chemical fertiliser on their coffee in 1994, this at a time when production costs had started to rise steeply.

Calculating the amount of fertiliser (Urea) that can be purchased by one kg of coffee at the price received by the producer, we found that the terms for this exchange were relatively stable during the 1980s when subsidies on fertilisers were still in operation. It was quite favourable around 1990 when coffee farmers experienced improved coffee prices due to devaluation and before the phasing out of input subsidies had reached full swing. In 1991, for example, one kg of coffee could buy nearly 19 kg of Urea fertiliser. Gradually, however, this favourable situation has shifted into a more difficult one. In the last two years (1999 and 2000), the purchase power of coffee versus farm inputs has been the lowest one in 20 years with one kg of coffee buying only 2.5 kg Urea in 2000 (see also World Bank, 2000, Table 4.2, 46).

In stressing the argument that the return margins in coffee cultivation have deteriorated in the 1990s, we have calculated the ratios of the unit price for a number of inputs (Urea fertiliser, Red Copper fungicide, Thiodam pesticide) to the unit producer price for coffee. 1988 is used as a base year (ratio 1:1), being the last year with full subsidies on farm inputs (Figure 9.1). A ratio below one indicates a favourable return margin, above one the opposite is the case. The figure reveals that the terms of trade and return marginal in coffee cultivation have gradually deteriorated in the 1990s, the negative trend accelerating after 1997.

97 Prices of fertilisers recorded by the author at Tanzania Farmers' Association (TFA) retail shop in Arusha. Prices for fungicides and pesticides were collected at Akheri Rural Cooperative Society, a local branch of ACU, selling inputs at market price (data collected by Roy Kaaya in January, 2001). Similar price increases affect other types and brands of chemicals.

Figure 9.1: *Ratio reflecting changes in the unit price for liberalised inputs in coffee cultivation (Urea fertiliser, Red Copper fungicide, Thiodan pesticide) relative to the unit price for coffee, 1988-2000 (1988 ratio = 1:1).*



According to the World Bank, yields at country level declined from about 400 kg per ha in 1981/82 to about 230 kg per ha in 1991/92 (World Bank, 1994a, 122).⁹⁸ Similarly, the economic return per man-day in the early 1990s was for coffee among the lowest of all crops produced for sale in Tanzania (World Bank, 1994a, Table, 240). Complementary data suggest that productivity and aggregate yields have gone down, especially during the latter half of the 1990s. In Table 9.2, the mean annual production for the country as a whole is given per five-year intervals from 1961 to 2000. No distinction is made between types of coffee and regional variations in production. Approximately half the country volume of Arabica is grown in Kili-

98 We must raise a note of caution about the Bank's presentation of data. Using data for specific years can be misleading due to substantial fluctuations in yields from one year to the next. Also, the quality of official statistical data makes assessments of longitudinal trends problematic (World Bank, 1994a, tables 241). While a decline in productivity is likely given the deteriorating terms of trade, the magnitude of the decline suggested by the Bank seems to be exaggerated. In fact, the Bank's figures are largely the effect of an 85 per cent increase (!) in the estimated area under coffee between 1981 and 1991. Most certainly, this does not reflect the real situation. These examples illustrate the problematic nature of official statistical data from African countries.

manjaro and Arusha area. Arabica accounts for roughly three-quarters of total production, the remaining part being Robusta (grown mainly in Lake Victoria region). Also in the Table are trends of productivity (kg/ha) and unit export value (in fixed US \$).

Although annual yield averages differ according to data source, long-term trends are consistent (Table 9.2). The increase in coffee production in the 1960s is foremost due to the increased participation in the market by smallholders. In the late 1960s and 1970s production volumes levelled out and annual averages were within the range of 48,000 to 55,000 tons. A decline in overall productivity (kg/ha) and total volume can be seen for the 1990s. The last five years show the lowest annual average production since the early 1960s.⁹⁹

Table 9.2: *Mean annual production of coffee ('000 tons) in Tanzania according to FAO, World Bank (WB) and Ministry of Agriculture (MOA), productivity in kg/ha (FAO) and export value in fixed US \$/kg (1985) (WB)*

Year	1961- 1965	1966- 1970	1971- 1975	1976- 1980	1981- 1985	1986- 1990	1991- 1995	1996- 2000
Production (FAO)	41.8	53.0	55.7	48.1	54.9	52.0	50.3	45.8
Production (WB) *	-	47.7	49.2	48.3	54.5	54.9	63.2	-
Production (MOA)**	-	-	-	-	-	47.0	47.8	43.7
Yield kg/ha (FAO)	424	471	507	492	488	450	395	397
Export value (WB)	-	2.4	2.2	4.3	2.5	1.9	0.8*	-

* Up to 1991 and 1992 only. ** Up to 1998 only.

Sources: FAO data: <http://apps.fao.org> (no specification of original data source); WB data (World Bank, 1994a, tables, 216 and 217-8), value deflated by MUV index, 1985=100. MOA data: http://www.bot-tz.org/Statistics/qreviews/table1_11.htm. The internet homepages were downloaded in January, 2001.

In retrospect, the 15-year period between 1965 and 1980 was generally good both in terms of producer price and government revenue (Table 9.2). Thereafter, for most of the 1980s, producers experienced declining returns as they were faced with falling international prices and national taxation. They benefited from an increase in real price in 1990-91 and again in 1993-94 following devaluation of the Shilling and smaller overheads reaped by the Tanzanian Coffee Board (TCB), and as frost in Brazil in 1994 increased

⁹⁹ Unfortunately, we were unable to illustrate this trend in Arumeru District due to lack of local data after 1996. See also Table 8.1.

the worth of Tanzanian coffee exports. This recovery in prices, however, was largely off-set by the rapid price increase for chemical inputs as we have demonstrated (Figure 9.1)

The overall declining trend since about 1980 in the export value of African coffee (Table 9.2), and affecting a range of other traditional exports as well, is due to the combined effects of international overproduction, the breakdown of export quotas agreements brokered by the International Coffee Organisation (ICO) and a relative strengthening of the world's largest roasters (at the end of the commodity chain) versus that of traders and producers (Raikes and Gibbon, 2000, 64ff; Van Buren, 1999, 1070). The relative commodity price index (1990=100) for mild coffee (Arabica), for example, declined from 244 in 1980 to 120 in 1996 for Africa as a whole (Raikes and Gibbon, 2000, Table 4, 61) following the downward trend in the world market price for coffee.¹⁰⁰

Up-rooting coffee

Locally, farmers' responses to these national and international changes appear quite dramatic given the historic importance of coffee as a wealth generator in Meru. After 1995, there has been an extensive uprooting and stumping¹⁰¹ of coffee trees among farmers in West Meru. Coffee is up-rooted for a number of reasons, including a need to use the land for house building. The main reason, however, is a combination of weak economic incentives for coffee production and better returns from alternative land uses, i.e. cultivation of vegetables, bananas or fodder grass.

A census in three Singisi subvillages (Mavinuni, Maringa, Nsitoni; Map 3.1) revealed that, in 1995 and 1996, 47 farmers uprooted all or part of their coffee and 45 stumped their plants. In all, there were 92 cases where land use shifted from coffee to other purposes. Between February 1997 and October 1998 another 109 farmers uprooted coffee and 23 stumped their trees. Within this three year period alone, about one third of all land-owning and

100 According to van Buren (2001, 1153), coffee accounted for 49 % of Tanzania's export earnings in 1986, 21 % in 1990, 17 % in 1998 and 14 % in 1999.

101 Stumping is a common method to regenerate old coffee trees by cutting the stems at ground level. Before the tree is fully regrown, the land can be used for other purposes.

coffee-growing households in the three subvillages investigated removed some or all of their coffee.¹⁰²

Although the uprooting of coffee to the outside observer seemed to signal a dramatic shift in land use, the implications of these measures are not quite as far reaching as they might first appear. These developments do not, for example, reflect a complete distrust in coffee cultivation, since some coffee farmers have opted to replant part of their fields with new Arabica varieties with a better resistance against disease.¹⁰³ In 1998, the cooperatives and some private purchasers on behalf of the TCB sold these varieties on a subsidy basis. Newly planted coffee is commonly inter-cropped with vegetables during the first seasons. Reports from Meru in 2000 indicate that these trends of uprooting, replanting and interplanting are continuing.¹⁰⁴

Coffee, land shortage and dairy farming

Another reason for the declining role of coffee as an income earner is the subdivision and shortage of land. Since the 1970s, most household heads have subdivided their coffee farms among heirs. With a less than optimal farm size, farmers have turned to alternative and complementary sources of farm income. The most important of these is dairy farming, which is driven by a strong demand for fresh milk in Arusha town.¹⁰⁵ Through the adoption of 'modern' graded dairy cows, which are permanently stalled in or 'zero-grazed' at the homestead, Meru households have managed to raise the local supply of milk. Even when land is very small, a household can maintain one or two dairy cows by bringing the fodder in from outside, hence gaining an income at level with or above that of coffee farming.

102 Unfortunately, we lack data on the acreage involved.

103 These varieties are known as Arabica KP425 and Arabica N39. In 1997, TCB began distribution of 8.2 million coffee seedlings in order to stimulate production. This was partly on the basis of buyers' concern about falling quality of Tanzanian coffee (Van Buren, 1999, 1070).

104 Correspondence with Jehova Roy Kaaya.

105 According to Jonathan Eliahu, a farmer in Mulala village, a graded dairy cow generates income at level with a one-acre coffee farm. Although such comparisons are very difficult to make, the relationship may still illustrate the basic argument: that land fragmentation makes dairy production a better option than coffee farming.

More than three-quarters of the households own up-graded or cross-breed dairy cows (78 %) and sell their milk foremost to consumers in Arusha town. The townships of Tengeru, Usa River and Mbuguni have also emerged as important outlets for milk. In spite of the good market, however, most households (66 %) have only one or two cows and productivity remains low by international comparison. Shortage of fodder and labour to collect fodder are among the main constraints. According to Laurent and Centres (nd, 18), average yield for improved dairy cows in Arusha and Kilimanjaro is about 1,800 litres per cow and year. By taking the mean of reported maximum and minimum yields per day in the past year times 365, we arrived at an annual estimate of about 1,400 litres per cow in Meru in 1994/95. Although considerably better than yields from zebu cows, this rather poor return is foremost due to feeding constraints. According to Laurent and Centres, low quality fodder (weeds, dry grass from roadsides etc.) represents about 45 per cent of the annual diet.



Photograph 9.1: Dairy cows are stalled in and handfed with banana leaves and grass collected from the farm and roadsides on the mountain or the plains.

Although fodder grass is commonly grown all over the mountain, quantities are generally insufficient due to the small farm size and most households need to complement fodder from outside. In the villages along the Arusha-Moshi road, for example, a stream of women and children on foot and to some extent men on bicycles, leave their homes every morning in order to cut grass along roadsides in the lowlands. And from both lowland and high mountain plots, crop residues (maize stalks) are brought home as cow fodder. Only a few households can regularly afford to buy dry protein feed, e.g. maize and wheat bran, cottonseed, sunflower cakes etc. Even fewer have access to motorised transport for bringing fodder grass to their homes. In addition, upgraded cows require water in large quantities that has to be carried from village taps or nearby rivers. They also need regular veterinary treatments.

Given the costs and risks involved in dairy farming, the adoption rate of graded and crossbreed dairy cows is nevertheless quite impressive. The initial capital cost refers to the purchase of the first heifer and the building of a cow shed. In 1996, prices for heifers ranged from 60,000 TSh to 250,000 TSh (US \$ 110 – 500) depending on age and quality of the breed (Carlsson, 1996,20). The initial cost for a pure-breed dairy cow including equipment reached 500,000 TSh (US \$ 1,800) in 1992 and half that amount for a crossbreed (Katyega et al, 1992, Table 5). Few households can afford this price for a graded or crossbreed dairy cow. In practice, the price is negotiable depending on the relationship between buyer and seller. Most households prefer to buy calves or heifers rather than mature cows, and they more often buy from within the village than from outside. The acquiring of dairy cows (and calves and heifers) is commonly subjected to barter and lending arrangements between kin and neighbours, this giving evidence to the importance of local networks for risk spreading, cost sharing and dissemination of information.

While in the 1960s, the government played an important role for supporting modern dairy farming on the mountain, partly by establishing a Livestock Training Institute (LITI) in Tengeru where farmers could acquire imported graded cattle, its role has declined thereafter and is now limited to extension and provision of veterinary services. Also these areas of government support, however, have been reduced following the economic crisis. 'Farmer to farmer' remains the most common way of spreading heifers and

disseminating management information. We found that in Singisi and a number of other villages an NGO, the Heifer Project International with an office in Arusha, has played a large role in spreading dairy cows and small livestock among relatively poor strata of villagers. Farmers under this project receive a heifer/cow for free but are obliged to pass on the first female calves to the project in order to have graded cattle spread to other households. This NGO targets farmers who can afford to keep a cow but cannot afford to buy one.

Despite considerable initial capital investment, bottlenecks in labour and fodder availability, and cash outlays for veterinary services and breeding (artificial insemination or natural mating with bulls in the neighbourhood), in the last two decades the production and selling of milk have developed into a most important income and food source for the majority of Meru households. Once established, the selling of milk and of calves and heifers generate incomes that within one to two years exceed initial capital outlays.

Coffee and dairy farming compared

Today, milk incomes may in fact exceed those of coffee. Informal interviews suggest that the reputation of coffee as a main income earner may be overestimated and that the figures we presented in the introduction chapter (Table 1.1) on coffee as the main income source should be cautiously interpreted. Since in most interviews the responding household head was a male, there may be a tendency to give emphasis to coffee since this traditionally is a male crop. Coffee incomes come in bulk, once or twice a year, while milk incomes are paid in minor portions at regular intervals. In total, when seen over a longer period, milk incomes may well exceed those from coffee.

Combining survey responses on coffee yields with records from Singisi cooperative society, average yield per farm in Singisi in 1995 was estimated to 223 kg. At the current price per kg, 750 TSh, average gross incomes per farm from coffee sales can be assumed to have been around 168,000 TSh (about 300 US \$), a rather modest figure.

In contrast to coffee, there are no official records regarding the production and sale of milk. However, the survey asked respondents to estimate what had been the maximum and minimum milk production in the year

preceding the interview (approximately reflecting the situation in 1995). With only one or two cows, production at household level may fluctuate considerably depending on recent calving or not. Also, it normally drops during the dry season due to shortage of grass and increases again during the rains. In 1995, the producer price was within the range of 140-160 TSh per litre.

Assuming that the daily average milk production can be approximated as the mean between the minimum and maximum production recorded by the household in the past year, we found that 182 dairy farmers in Singisi produced on average 5.1 litres of milk per day (1995). Assuming further that 4 litres are marketed at a price of 150 TSh per litre, households are left with a gross income of 600 TSh per day. On a yearly basis this amounts to 219,000 TSh (about 400 US \$). With three litres marketed, the gross income is at par with that received from coffee (164,000 TSh). In addition, households gain incomes from sale of heifers and bull calves.

This comparison, admittedly a simplified one and for only one year, is to the slight advantage of milk production over coffee as a main income earner. Although we did not consider production and capital costs in our calculations, the overall trend points in the direction that coffee no longer holds the supreme position as the income earner and trigger of social development that it did in the period 1950 to late 1970s.¹⁰⁶

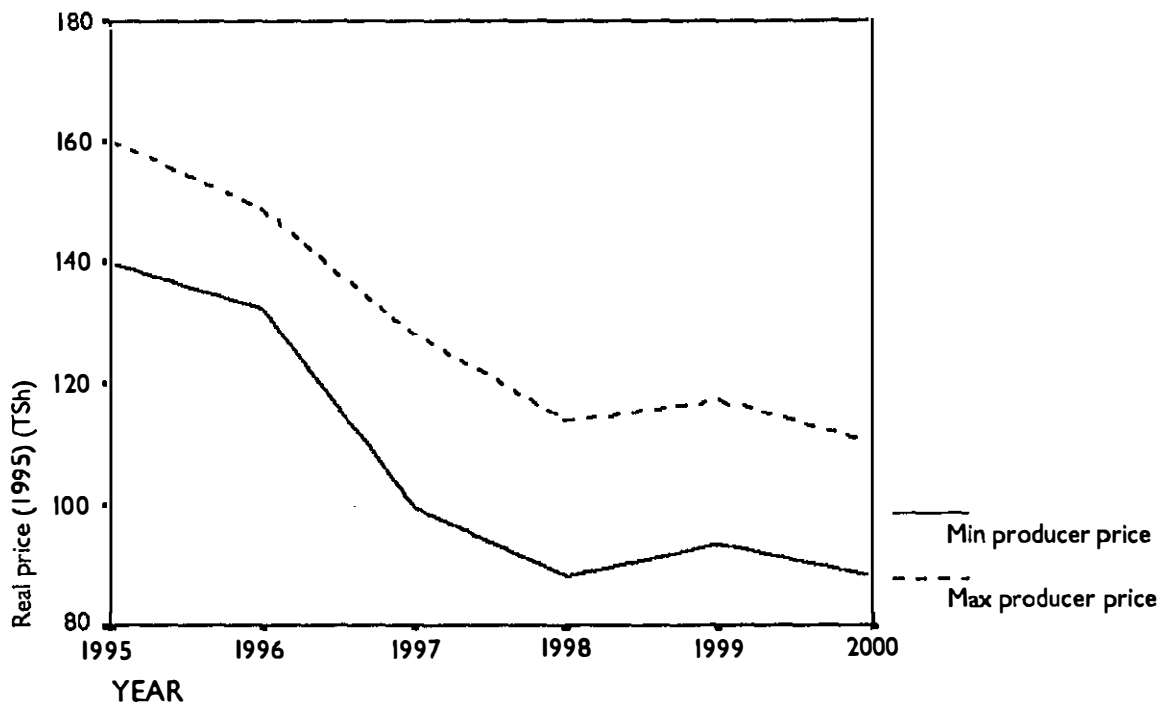
There is a commonly expressed view surfacing in informal interviews with farmers that the sale of milk and bananas constitute the most reliable and rewarding sources of farm income. Disappointment with coffee is widespread following dramatic price increases for inputs, modest producer prices, high overhead costs by the cooperatives and the market board and the slow handling of payments by the cooperatives.

It should be noted, however, that milk producer prices have not kept pace with the national consumer price index, according to our recording of the milk price since 1995. In 1995, the minimum and maximum producer

106 A cost-benefit analysis made by Katyega et al (1992, 9ff) for the HPI project in Arumeru District for the period 1990-92, suggests that dairy farming with a purebred cow is slightly more profitable than coffee/banana farming but slightly less profitable than cultivation of maize/beans. The comparison is made on the assumption of a one ha farm. Given the fact that the average farm size on the mountain is only half this size, and that the profitability of coffee/maize farming has declined in the 1990s, the advantage of dairy farming may in reality be larger than indicated by this study.

price was reported to be 140 and 160 TSh, respectively. In 2000, the price was 160 and 200 TSh. This represents a fall in real price by 30 per cent (Figure 9.2). Since consumer prices in Arusha show a similar trend, the decline in real producer price cannot be explained by middlemen having increased their profit margin.¹⁰⁷

Figure 9.2: *Minimum and maximum producer price for fresh milk 1995-2000 (1995 prices, TSh)*



To judge from the price development, it seems as if the rapid increase in milk production for the market since 1980 for the time being has satisfied the demand for fresh milk in Arusha. Some Meru milkboys now load their milk onto buses to Mbuguni where prices are better. There is a limit, however, to how far fresh milk can be transported before it deteriorates. Without processing facilities or a local dairy industry, or a radically improved purchase power by the urban poor, the market is unlikely to expand.¹⁰⁸

On the supply side, at household level, it seems as if the small land size, scarce fodder resources and labour shortages in combination set definite limits as to the number of cows and the amount of milk that can be pro-

107 Source: author's interviews with milk producers and vendors. For 1999-2000, personal communication with Roy Kaaya.

108 In the mid 1990s, a small private dairy processing plant was set up in Arusha.

duced, at least as long as the farmer chooses not to specialise in dairy production, which is rarely the case. To a great extent, coffee farming and milk production are practised as complementary activities. Both constitute central components in the mixed farming system practised on the mountain and in which the keeping of cows is important, not only for the sake of milk income, but also for producing manure for the fields.

Risk aversion and flexible family labour

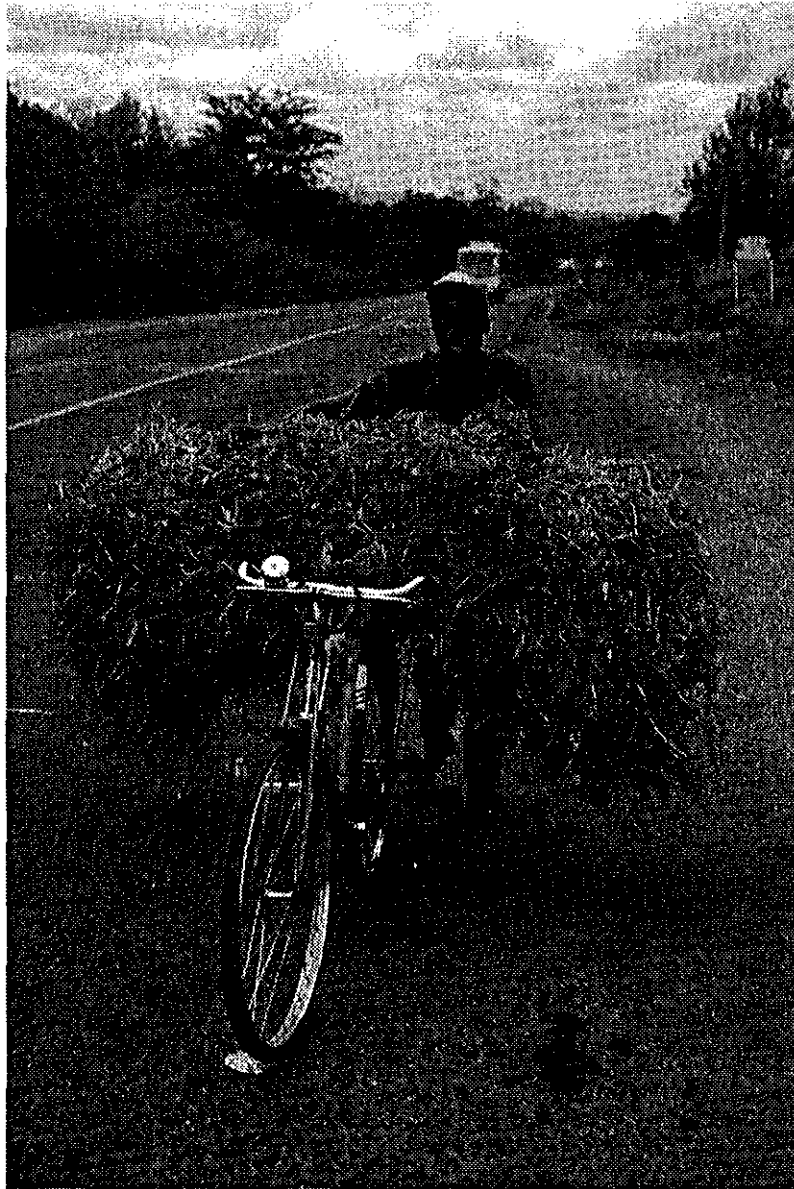
The strategies pursued by farmers in Singisi illustrate the theoretical discussion on risk spreading and diversification we brought up in Chapter Two and continued in Chapter Seven. Coffee cultivation is a long-term undertaking in which farmers can temporarily endure worsened market conditions in the hope of improved terms in the future. Family farmers can endure these fluctuations because of their dependence on family rather than on hired labour and because they have a range of alternative and complementary income sources to depend on. It takes several years for a coffee tree to give yields. Once producing, it can carry on for decades given proper maintenance. In this sense coffee is a conservative crop. While yields and prices may go up and down, as will the attention of the farmer to his coffee shamba, coffee nevertheless represents a secure minimum cash income and a safety valve. In the long-term perspective of the farmer, the uprooting of coffee followed by a partial replanting makes sense. Rather than replanting the whole shamba in coffee, the option for alternative uses is kept open, for as things have developed in the 1990s, better and above all quicker returns are forthcoming from alternative crops and dairy farming.

Dairy farming, in contrast to coffee, is a much riskier activity and requires a substantial capital investment. Cows need the constant attention of their caretakers. If a cow dies, a farmer loses his capital. If this happens, alternative income sources may help him acquire new stock. Also in relation to dairy farming, we can see how the long-term perspective of the farm household determines the balance between different income sources. The overall concern is the wellbeing of the family rather than the short-term maximisation of yields. All the Singisi households we interviewed on several occasions between 1995 and 1998 gave testimony to the importance of milk

income. In spite of this recognition, the spread of income sources rather than specialisation in milk production proved to be the wisest strategy. Without fallbacks in the form of alternative income sources, two of the households we interviewed and whose cows died in the interim would have been at peril. Also, with producer prices now stagnating for milk, it is hardly surprising that farmers are cautious about milk specialisation.

In the 1990s, neither coffee cultivation or milk production seems to have implied rising returns per unit input. For coffee, falling prices on the world market and liberalised input prices have drastically deteriorated terms of trade on the side of the producer. For milk, falling real prices mean that returns per labour input unit is declining. We lack detailed data on price developments for purchased protein feed in the 1990s. However, given that the real price for staple food crops has remained fairly constant in the last decade, we can assume that the cost for feed (e.g. maize bran, wheat bran etc.) has not risen at pace with the inputs in coffee farming. Veterinary services and medicines, however, have become more expensive, a complaint often voiced by the farmers interviewed. All in all, our impression is that the terms of trade for milk have been less negatively affected by the rising input costs compared to the situation for coffee.

However, unless the productivity of labour can be radically improved, it is difficult to see how dairy farming can contribute to substantially improved incomes and living standards for Meru households. Under the circumstances, few farmers can afford to or are willing to risk buying commercial feed or to consult veterinary services. And, increasing labour input into what is already a laborious activity is by itself unlikely to raise productivity and per capita incomes much further.



Photograph 9.2: Collecting animal fodder from the plains is a laborious activity involving mainly women and children. Increasingly, however, men participate in this work carrying loads of grass on their bicycles.

Vegetables

In most cases, vegetables and bananas replace 'permanently' uprooted coffee. Bananas are an important food and cash crop for which there is a reliable market. Also vegetables have been a reliable cash crop since early colonial rule. In the 1990s, there has been a substantial increase in the demand for

vegetables, particularly tomatoes, from nearby (Arusha) and more distant domestic markets (Dar es Salaam). Tomato cultivation is an intensive form of land use suitable for small and irrigated plots and with a potential of two or three harvests annually. Tomato cultivation has spread rapidly on the mountain in recent years, especially in West Meru where irrigation facilities are good. Initially, it was taken up by unmarried youths and young household heads that had accumulated a small capital from wage labour or petty business, and who rented portions of land on a short-term basis. It requires a substantial labour input in all its phases of cultivation, as well as an initial capital to pay for plants, sticks, and input chemicals.

From what we could learn through interviews with growers, returns seem to be rather good in tomato cultivation. For example, a $\frac{3}{4}$ acre plot of tomatoes in Nguruma village, cultivated by two youths on land rented for four months in 1996, gave a net profit of about 400,000 TSh (about 750 US \$), cost of own labour not counted. In Singisi, a similar tomato operation in February 1997 by three local youths renting a one-acre plot for three months, required about 170,000 TSh in inputs. Returns were expected to be within the range of 500,000 – 800,000 TSh (about 1,000 – 1,500 US \$). In both cases, the net income per head and growing period ranged from about 150,000 to 200,000 TSh, a figure which compares favourably with those presented earlier on coffee and milk income.

Driven by good prices, tomato cultivation was adopted on a large scale in the 1998 season with the result that markets were flooded and profits temporarily dropped. Some of the growers probably made losses. During 1999 and 2000, production and prices are reported to have stabilised, partly because markets have expanded.¹⁰⁹

Tomatoes are grown on contract with external merchants who come to the farm to collect the crop or, more commonly, are sold directly by growers to wholesalers or retailers in for example Arusha. Tomatoes, spinach, onions, cabbage, sweet potatoes, and bananas, are on a daily basis carried on heads and in wheel barrows to pick-up points along the Arusha-Moshi main road, or to the nearby markets, from where wholesale merchants transport the produce by road to far away places like Nairobi, Tanga or Dar es Salaam

109 Correspondence with Roy Kaaya, January 2001. Unfortunately, the sample survey was completed before the onset of the boom in tomato cultivation and we lack detailed and up to date data on production levels, prices and the acreage involved.

within hours. At the Tengeru bus stand, tomatoes and other fresh vegetables are loaded onto the Dar es Salaam buses every morning.

Cash crop farming under structural adjustment

Jointly with dairy farming, the rapid increase in the cultivation and sale of vegetables, especially tomatoes, is the perhaps most conspicuous change in farm production that has taken place within the liberalised market framework. Private crop traders and transporters, who for a long time were banned from official markets, have come back into business. For the growers, vegetable cultivation is a laborious kind of land use but one that increases the output value from land more than any alternative agricultural use at the moment. The good market motivates the use of expensive inputs, and thanks to irrigation growers can reap several harvests annually.

In the 1990s, especially, there has also been a conspicuous monetisation of the local economy. The cost sharing of social services and ready access to consumer goods, which were absent during the years of crisis, have not only resulted in new opportunities of earning income outside farming but also increased the need for cash income for households having to pay school fees or medical costs or demanding the consumer goods that are now being sold in local shops and in Arusha. Milk and vegetable production, as well as off-farm incomes, satisfy the demand for 'quick' cash while coffee does not due to its uncertainty and once a year type of payment (see also Ponte, 1998, for findings in this direction in Songea and Morogoro District). This is probably the major reason why milk production maintains such popularity. With milk sold on the market, there is a regular flow of cash into the household.

The declining significance of both coffee cultivation and the cooperative movement is also indicative of the major shifts in policy and markets that have occurred since independence save for the effects of the diminishing size of coffee farms due to land fragmentation. The cooperative was, in many respects, a true grassroots organisation and an example of demand driven agricultural extension. It initiated social and agricultural development and enjoyed the confidence and credibility of most of its members. This is not to say that the cooperative movement in Meru was without problems. Lack of accountability among the leadership and high overhead costs were common

problems facing cooperatives all over the country at independence, Meru being no exception. These problems, however, did not overshadow the fact that farmers benefited from membership in these organisations.

After independence and the political change towards African Socialism, there was a gradual bureaucratisation and politicisation of local cooperatives all over the country. In 1976, the government abolished farmer cooperatives as independent organisations and submerged them under their respective crop parastatal and marketing board. The coffee cooperatives in Arumeru and the Arusha Cooperative Union, for example, became organised under the Coffee Authority of Tanzania (CAT). At the local level, village governments and administrations took over the functions of the prior cooperatives and administered the sale of crops and distribution of inputs. High overhead costs, embezzlement of funds, delays of payments and input deliveries and lack of local influence were among the factors that contributed to the declining confidence felt by local farmers towards the government run village 'cooperatives'.

The government's formal reinstatement of cooperatives in 1984 was a half-hearted measure and did not suffice to rectify these problems or rebuild farmers' confidence in the cooperative movement, especially since the cooperatives remained under central political headmanship. The regional cooperative unions, for example, were subjected to central budgeting, planning and directives, and were seen by politicians as tools for the realisation of the party's vision of rural development. Not until the early 1990s, did the former cooperatives regain their status as independent farmer organisations. By then they were bankrupt, their assets dispersed and their public credibility destroyed.

It is difficult to establish a direct causal relationship between, on the one hand, the gradual distancing of the cooperative movement and its politically recruited leadership from ordinary farmers' conditions and, on the other, the performance of the latter in terms of farm output. Such a relationship is not unlikely, however, and would fit the pattern of declining incentives in coffee production and perhaps would also illustrate the present unwillingness by farmers to organise along cooperative lines.

In the new era of privatisation and economic liberalisation, and worsened margins of profitability for coffee, the cooperative movement in Meru has never fully recovered. Today it competes with private purchasers of coffee.

Sceptical about privatisation at first, most farmers are now selling to private traders, preferring immediate payment instead of a possibly higher price from the cooperative later on. This means that the cooperatives' traditional role of providing credit in the form of advance 'payments' for coffee has largely disappeared. With few other possibilities of obtaining credit, the drastic price increases for farm inputs has meant that chemicals are now mainly applied on crops that fetch a good market price (i.e. vegetables) while application on traditional crops have been reduced.

Dairy farming and vegetable cultivation are other cases illustrating the lack of confidence in cooperative solutions to production. Locally produced milk has a secure market and a potential for increased productivity. However, high input costs and labour requirements, as well as economic risks, deter farmers from giving more attention to this potentially profitable sector. Producer cooperatives, or different kinds of contract farming with the incipient dairy industry in Arusha, could help reduce some of these risks, and could provide credit and cheaper inputs from bulk purchases, and so on. In the 1960s and 1970s, the coffee cooperatives extended credit for the purchase of dairy cows using future coffee yields as collateral. This is no longer possible and subsequent attempts at organising milk marketing on a cooperative basis have not been successful.¹¹⁰ Save for the contracting of 'milk-boys', who ferry milk to their customers in Arusha by bicycle, sale of milk and input provision are done as individual activities.

Also for other crops (e.g. vegetables) there is a lack of local farmer organisations that could help buffer against price fluctuations and overcome some of the marketing and input constraints associated with farming under the present shortage of land and macroeconomic conditions. In many ways, the present situation of individual marketing resembles the one that characterised coffee production in the 1930s and 1940s.¹¹¹

110 In Singisi, a women's group under the United Women of Tanzania (UWT) organisation runs a dairy farming project in the form of producer cooperative. This was the only case of cooperative organisation of milk production that we came across in Meru. Unfortunately, at the time of fieldwork this group suffered from management and leadership problems leading to poor performance and underutilisation of the land and the other resources it was controlling.

111 It was reported, however, that in 1999 and 2000, small groups of coffee farmers on their own account have begun to market their coffee directly and wait for payment until after the auctions, thereby reducing the 'profit margin' of middlemen. Correspondence with JehovaRoy Kaaya, October 2000.

Concluding comment – at the verge of involution?

While the (partial) transformation from coffee to dairy and vegetable production gives testimony to the continuation of a both population and market driven agricultural intensification on the mountain, production (and incomes) remain nevertheless constrained by market uncertainties, narrow profit margins due to high input costs, institutional bottlenecks and labour shortages within households. Economic liberalisation has opened up new avenues of crop marketing and provided incentives of increasing production. In this respect it represents a positive change from the years of crisis under Ujamaa.

At the same time, however, under the present market and institutional conditions, it is doubtful if the level and pace of farm intensification is sufficient to raise per capita income levels and compensate for the land fragmentation process. Productivity of labour is low, especially in dairy farming, and for most households incomes from farming are rather modest, amounting to a few dollars per day when estimated over a year period. A situation of involution, as we discussed in Chapter Six, seems to describe the situation for dairy farming where the initial earnings gained from the adoption of graded dairy cows have been lost by households drawn into a vicious circle of increasing labour requirements on a decreasing size of land, low level of labour productivity, lack of capital for investment, and saturation of local markets. We lack sufficiently detailed data on other crops, especially vegetables, for a conclusion in this direction as regards agriculture in general. What seems certain, however, is that an increasing number of people finds it difficult to make a living from farming alone on the mountain.

It is in this light that we should see the increasing attention paid by virtually all types of households to income generation from outside the farm. Before turning to discuss 'de-agrarianisation' in the Meru context (Chapter Eleven) and the effects on agriculture of households' off-farm incomes (Chapter Twelve), we will discuss the situation for food crop cultivation, subsistence farming and food security in Meru following changes in land use and the political environment.

Food crops and food security in the post-independence period

Introduction

A central issue demanding the attention of most development planners in Africa is the relationship between markets and population dynamics on the one hand and food supply and prospects of prosperity/poverty on the other. While the general positions in the debate about this relationship were outlined in Chapter Six, we will here concentrate on local developments, looking at trends of food production and food security, and relate these to changes in household livelihoods in the local context of population growth, market exchange and state intervention.

It should be noted that any assessment of trends in food crop yields must necessarily rely on indirect evidence and indicators. The large portions of food crops grown for own consumption or marketed along parallel channels makes historical records of official crop purchases a poor indicator not only of marketed yields but also of how well local food production in general has been able to keep pace with population growth. Raikes and Gibbon (1995,44), for example, estimate that “...over 80 per cent of Tanzania’s crop production is sold through markets beyond the reach of any form of statistical data gathering, so that output estimation is little more than informed guesswork.” This is also evident from the lack of consistency between major data sources dealing with Tanzanian food crop production statistics such as the Ministry of Agriculture, Marketing Development Bureau, Bank of Tanza-

nia, World Bank, FAO and others (see also World Bank, 2000, Table 5.5 and 5.8, and pp. 101ff).

The argument raised here is, that in spite of a more than eightfold increase of the Meru population in the course of last century, there is little in support for the view that human numbers have outpaced local food supply or eroded households' entitlement to food or jeopardised the future ability of the land to generate food. In other words, the situation in Meru does not easily fit into the Malthusian scenario for Africa that gained increasing popularity in the 1980s as population growth continued unabated and the continent plunged into deep economic crisis and political confusion. On the contrary, circumstantial evidence suggests that in Meru food security has gradually improved over the years.

Moreover, the historical evidence we are about to scrutinise suggests that food security and sustained land use do not necessarily require that every household per se is self sufficient in own produced food. What matters is households' entitlement to food, a proposal which draws on the Noble Prize winner Amartya Sen's thesis on 'food entitlement' and the causes of poverty, hunger and deprivation (Sen, 1981).¹¹²

For most households in Meru, food security is a matter of both own food provisioning as well as of cash income generated from the sale of crops or from off-farm work. Entitlement to food depends both on individual or household characteristics such as control of resources, educational level, occupational skills, social status and supportive networks, as well as on societal and institutional factors such as land tenure arrangements, gender relations, access to (urban) markets for crops, terms and conditions of market exchange, opportunities for earning income outside farming, market food prices etc. Both market conditions for crop sales and opportunities for earning income outside agriculture, and hence entitlement to food, can be boosted or impeded by central policies relating to small-scale agriculture and its side activities.

In principle, agricultural growth may take place from production of non-food crops as well, and where farmers prefer these it is because such crops imply a higher return to land and labour than food crops do. Some people may argue that in the African context, in which women deal with subsist-

112 For a definition and measurement of food security according to this approach, see World Bank (2000, 101).

ence crops and men with cash crops, the allocation of cash crops to the best lands represents a trade-off in terms of food security for the household as a whole.

To some extent, this holds water also in Meru. The introduction of coffee increased the labour burden for women more than for men by pushing cultivation of food crops, for which women were responsible, out on the plains or up the mountain. However, although coffee by all means is a male crop with the main revenue going to men's priorities, gender differences have never fully barred the use of coffee money for improving life on the mountain for all household members, or for buying supplementary food on the market in times of need. Increasingly under land scarcity, men have been obliged to take an active part in most agricultural activities including food crop cultivation, and although this by no means should imply that gender relations are equal, it would be misleading to divide cash crops and food crops along strict and traditional gender lines.

Food security evolving

We have pointed out earlier that historically, the mountain population has enjoyed a privileged position in terms of food security compared to surrounding areas. Recurrent droughts causing food shortages and famine conditions in the central provinces and on the plains surrounding the mountain were common both before and during colonial rule (Bryceson, 1993; Spear, 1997). On Mount Meru, however, such hardships were rarely experienced.

The severe drought that hit Northern and Central Tanganyika in 1960/61 is illustrative of the contrast in food security experienced between the mountain and the plains following the settlement on the latter by large numbers of Meru in the preceding decade. On the plains, the farming system evolved around rainfed cultivation of maize and beans, supplemented by livestock keeping. Given the vagaries of the climate, however, this was a perilous dependence for those who had few other sources of food or income. In 1961, only 4-5,000 tons of maize was marketed in Arusha District compared to 26,000 tons the year before. Maasai cattle died in thousands for lack of grazing. By October 1961, nearly 20,000 people depended on fam-

ine relief in the form of American maize and milk powder that in large quantities were imported to the district.¹¹³

While drought hit the plains, the mountain remained relatively unaffected and did not require any relief at all. According to a memo by the District Commissioner in May 1961 to the Provincial Commissioner in Moshi, households on the mountain were 100 per cent supplied with own production of maize, bananas, potatoes and cassava. In fact, north of the main road there was a surplus of maize of 2,200 tons, while south of the road the crop situation varied from poor to complete failure. On the assumption that families on the mountain would provide maize for their relatives on the plains, the supplementary needs of imported maize for the following year were assessed to 3,100 tons and of milk powder to 48 tons.¹¹⁴

A less severe but still precarious food situation occurred in 1965 when 400 tons of relief maize were required in Arusha/Meru District. Assessing the situation, the District Agricultural Officer concluded that no assistance was required to the mountain where people have money, coffee, bananas, onions and other vegetables, the sale of which help them purchase supplementary requirements of maize and beans.¹¹⁵ The same pattern was repeated during the drought in 1974, and again in 1984. People on the mountain did not only have a larger spectrum of food crops to rely on but were also able to use money raised from sale of cash crops to support themselves and their relatives on the plains. In 1998, many households experienced a near complete failure of maize on the plains, not from drought but from floods caused by torrential and excessive 'El Niño' rains at the time for planting. Again, mountain dwellers relied on short season maize harvested in February and on bananas that had yielded well and bought what else they needed on the market. In 1999 and 2000, again, drought caused production shortfalls of maize on the plains. However, incomes raised from sale of milk and vegetables, and from off-farm employment, have helped households to balance harvest failures by purchases of maize at the market. During this time,

113 TNA files: 471/A.3/4/2 1961-62, *Famine relief*; 471/A.3/12, *Monthly Agricultural Reports 1951-61*.

114 TNA file 471/A.3/4, 1949-61, *Famine situation*, memo by D.C. to P.C., dated 31 May, 1961

115 TNA file 471/A.3/4/Vol.III, 1962-65, *Drought and Food Situation*. Report from Regional Office to Principle Secretary, President's Office, dated 11 November, 1965.

maize and beans from Zimbabwe, Malawi and South Africa have been imported to Arumeru District.¹¹⁶

These events show that the mountain population as a whole has not experienced fallbacks in food security despite its tremendous increase over the last century. On the contrary, it seems likely that the mixed farming system involving dairy farming and a large variety of crops, irrigation, sale of crops on the market, as well as off-farm incomes have broadened their income sources and livelihood options. Taken together, these changes have increased rather than decreased food security and improved the ability of the local population to endure failures of the staple crops they grow on the plains. Food security is, however, a complex issue and aggregate data and trends may not tell the full story of how entitlement to food is experienced by different social strata. A central aspect relates to resource and income distribution. We will deal with that issue more closely later on while concentrating here on overall trends.

Trends in food crop production

How has food provisioning developed on the mountain and in the district as a whole during the last century? As was stated initially, it is virtually impossible to assess with any reasonable accuracy the absolute levels of production of common food crops. We concluded in the previous chapters that during the colonial period, the Meru were able to sell a surplus of food crops indicating that the rate of food production increase was ahead of the population growth rate for most years.

On the plains, reduction of fallowing and introduction of chemical fertiliser and hybrid maize seeds in the 1960s and 1970s are likely to have increased overall yields of food crops. Shortages of staple foods have been temporary and caused by lack of rainfall rather than by overpopulation. When rains reverted to normal, food production recovered.

116 Correspondence with Roy Kaaya, October, 2000. For the country as a whole, the 1990s have been a problematic decade in terms of food security. Large quantities of food were imported in 1992, and severe drought in 1996/97 required the distribution of food relief in 1997 and 1998 under the auspices of the UN World Food Programme (WFP) (Van Buren, 1999,1071).

On the mountain, production for the market of various crops, particularly coffee, has substantially increased the value output from the land. This has been the case also for staple food crops. Denser stands of banana and introduction of hybrid maize and chemical fertiliser increased yields on the slopes above the coffee belt. The introduction of graded dairy cows, and its current adoption by nearly four households in five, means that virtually every person on the mountain has daily access to a highly nutritious and protein rich source of food. Although yields in dairy farming, as is the case for most crops, is well below the potential, the situation in Meru with respect to nutrition, incomes and food provision appears to be better than in most other places in the country.

At the same time, there are indications that in the 1990s the production of staple food crops (maize in particular) in the district has been below the level of self-sufficiency with increased dependency on food imports as a result. In Table 10.1 estimates are given for the most important locally produced food crops in Arumeru District, compiled by staff at the district headquarters.¹¹⁷ The Table also indicates the local maize provision balance, which for most years of the period stands at deficit values, according to the District Agricultural Office. As stated earlier, however, estimates are subject to considerable uncertainty and may divert substantially from the real situation. They are based on staff members' visual inspection of a limited number of field spots in different parts of the district. Estimations reflect expected yields given the results of previous years, the current state of the crops, local weather conditions etc. No data was obtainable as to the exportation and importation of food crops to the district.

We can observe from the Table that for several crops there is great variation in estimated production and yields from one season to the next, mainly owing to annual fluctuations in rainfall, which is the most important factor influencing harvest outcome. Hardly surprising, these variations are most apparent for rainfed crops such as maize, beans and sorghum grown mainly on the plains, while for crops grown on the mountain or under irrigation (e.g. bananas, potatoes and vegetables), yields are more stable from one year to the next. The area under maize in the district ranged from about 10,000 to 16,000 ha within the period.

117 By courtesy of Ms Mwanaidi and Mr Rugangila at the District Agricultural and Livestock Office, Arumeru.

Table 10.1: *Estimated production (tons) and yields (tons/ha) for a selection of important food crops in Arumeru District 1985-1995 (compiled at the District Agricultural and Livestock Office, Arumeru).*

Year	1985/86	1986/87	1987/88	1988/89	1989/90	1990/91	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99	1999/00
Maize (total)	19,775	19,775	18,225	28,450	25,990	19,540	30,260	5,300	28,125	31,615	42,000	42,000	20,800	36,000	2,250
Maize (tons/ha)	1.4	1.6	1.1	1.8	1.6	1.2	1.8	0.5	2.3	1.8	3.0	3.0	1.6	2.3	0.3
Maize (3-y-aver)	19,775	19,258	22,150	24,221	24,660	25,263	18,366	21,228	21,680	33,913	38,538	34,933	32,933	19,683	19,125
Maize balance (tons)	-3,375	-14,560	-6,745	+18,730	-899	-10,835	-18,285	-7,065	-21,205	+20,740	-3,635	-2,520	-2,500	-23,320	-14,520
Beans (total)	2,190	6,475	2,800	4,503	4,415	2,710	6,305	1,325	7,700	3,000	5,000	5,000	4,000	10,000	1,800
Beans (tons/ha)	0.6	2.2	0.4	0.6	0.6	0.4	0.9	0.2	0.7	0.4	0.8	0.8	0.5	1.3	0.3
Bananas (total)	81,810	81,810	72,000	70,000	93,600	72,000	72,000	87,490	72,000	70,000	11,000	30,000	45,000	40,000	33,750
Bananas (tons/ha)	12.5	12.5	10.0	9.7	13.0	10.0	10.0	13.0	10.0	7.1	1.2	3.3	5.0	4.4	3.8
Irish potatoes	398	390	600	435	490	230	430	435	230	450	1,450	170	500	235	260
Sweet potatoes	165	165	170	230	195	250	435	230	230	250	555	205	150	150	215
Cassava	836	820	500	725	725	725	1,000	200	200	225	225	400	150	300	170
Sorghum	2,150	2,390	100	900	900	900	600	-	100	300	100	-	-	-	-
Pigeon peas	100	160	450	595	570	610	555	250	600	230	1,200	700	500	300	15
Vegetables	3,160	2,850	4,000	3,250	4,095	4,010	4,010	1,340	-	4,095	4,095	2,000	500	1,200	785
Fruits	3,320	3,300	3,150	3,150	3,235	3,265	2,665	2,500	-	3,315	2,405	1,350	1,800	3,500	1,385

It is difficult to conclude from the Table any consistent long-term trends in production of major staples. By calculating three-year moving averages in maize figures, some of the effects of weather fluctuations are levelled out. This operation reveals that average annual production during the period have been within the range of 19,000 to 25,000 tons (Table 10.1). The four years between 1993 and 1997 are exceptions when good rainfall caused production and yields to nearly double.

More than anything else, however, we must warn for the uncertainty of the figures presented in the Table. Production figures for maize in 2000, for example, indicate more or less a complete crop failure. Although there are reports of serious crop shortfalls in 1999 and 2000 due to lack of rain, the situation is far from the catastrophe that official statistics may suggest. Similarly, after a fairly constant production of bananas up to 1994, yields thereafter seem to have experienced a considerable drop according to the official estimates. No other data have verified this dramatic decline in the official statistics for bananas, and it remains largely unexplained by reference to the mountain situation. Survey data and household interviews rather points at the contrary situation. Bananas are cultivated for both subsistence and for sale by four households in five on the mountain (Chapter One, Table 1.1), the market is expanding, and production is increasing rather than declining. Production increases derive from denser stands of bananas and from exchanges of coffee trees for banana trees. In places where irrigation is available on the plains, banana groves are established there as well. In 2000, there was, however, a noticed scarcity of bananas due to prolonged drought that affected parts of the lower mountain slopes.¹¹⁸

118 Correspondence with Roy Kaaya, January 2001.



Photograph 10.1: Every morning women carry bunches of bananas on their heads to pick-up points along the Arusha-Moshi road. Bananas are an important source of cash and a staple food on Mount Meru.

There are also question marks for the official figures on vegetables and fruits. According to official records, production has remained fairly constant over the period covered and with no trace of the current boom in vegetables (tomatoes) and fruits. The recorded decline for cassava and sorghum, on the other hand, seems to be in tune with actual field observations. Sorghum has lost out not only in terms of absolute yields but also when it comes to area under cultivation.

Below is outlined the impact on local food production from the quite contrasting central agricultural policies launched during the last half century with emphasis on the situation under structural adjustment.

Shifts in agricultural policy

In the 1950s, production of food crops for the market increased steadily in Arusha District as well as in the country as a whole. This was partly due to infrastructure improvements, a supportive price structure for food staple production and increased participation by African smallholders in the market. Under the policy of the Grain Storage Department (GDS), Tanganyika as a whole became self-sufficient in food staples for the first time during colonial rule (Bryceson, 1993, 47ff). However, political pressures were calling for a deregulation of markets. Given the falling grain prices on the world market in the 1950s, the growing national grain surplus was as expensive to administer and export as it was to import food. Following the bumper harvest in 1955/56, all legislation regarding the control of markets was lifted and grain marketing reverted into private hands under the domination of Asian merchants controlling the grain trade. In their capacity as buyers, wholesalers, brokers and millers, Asian merchants in some regions assumed a virtual monopoly situation in the trade and transportation of grains (*ibid*, 50-1).

The private interlude in grain marketing lasted for six years only, between 1957 and 1963. It meant that producer price margins generally declined as the unregulated market price was set according to local demand and supply factors as well as by the current import and export situation for grain. When severe drought hit the country in 1961, this once again prompted government interventions in food markets. Through the National Agricultural Products Board (NAPB), formed in 1963, minimum producer and maximum consumer prices were reintroduced and decided from political standpoints. Apart from setting prices, the NAPB regulated sales, transport, storage and processing. And, it established a famine reserve stock of grain to meet future needs (*ibid*, 53ff).

In the 1950s, the major challenge to Asian dominance in the grain trade was political. With the formation of NAPB and the power to issue trading and milling licenses on political grounds, the government appointed smallholder cooperatives rather than Asian merchants as trading agents and rural millers. Following the Arusha Declaration in 1967, and the path to African Socialism, the country's large urban mills were nationalised forming one large parastatal company, the National Milling Corporation (NMC). In

the 1970s, NMC assumed responsibility not only for urban milling but for procurement and transportation of maize from all over the country at prices that were politically and centrally decided. Within a short time, the cooperatives and the NMC had replaced private (Asian) milling and trade in grains (Bryceson, 1993; Havnevik, 1993).

Although the cooperatives had a strong rural base, their performance and efficiency in food crop procurement was subject to growing peasant dissatisfaction in the late 1960s and early 1970s. Between 1964 and 1973, average overhead costs of cooperative unions was 48 per cent of the producer price, whereas that of the marketing board was 25 per cent, causing farmers to sell their crops in parallel markets rather than to cooperatives (Bryceson, 1993,56-7). Cooperatives were instrumental, however, in the expansion of grain production through their provision of inputs and market facilities. And in spite of the large cooperative mark-ups in the grain price, there was a surplus production of maize in the 1960s, a circumstance which implied heavy losses for the NAPB (Bryceson, 1993; Ellis, 1983; Kriesel, 1970).

Increased state intervention and economic crisis

Partly triggered by a series of drought years in mid 1970s, the Tanzanian government embarked on a far-reaching programme of rural development. The state extended and tightened its monopoly control of marketing, input distribution and trade in essential crops and basic consumer goods. A burst of donor assistance with the World Bank at the front accelerated this approach towards state controlled agricultural modernisation. As noted by (Gibbon and Raikes, 1995,43), during this time real state spending on agriculture reached heights that have never been equalled before or since.

By elevating NMC to the position as the sole buyer of maize in the early 1970s, the cooperatives became executing agents of NMC marketing operations and their role as independent farmer organisations disappeared (Bryceson, 1993,69). In 1976, the government unilaterally abolished the cooperative societies altogether, and made village governments responsible for local food procurement on behalf of NMC. By controlling the entire market chain from purchase to milling through one single channel stretching from the village to the urban mill, and with fixed prices at all levels, the govern-

ment envisaged through NMC a more efficient marketing than had been the case under the prior NAPB regime. In reality, problems of bureaucratisation, transportation, personnel, equipment maintenance and accounting proved gigantic. Political directives that were ill at terms with financial and organisational realities added to the problems and forced the NMC to run its operations at huge losses that had to be covered by bank overdrafts, which in turn fuelled inflation and led to a crisis within the state banking system (Bryceson, 1993,70ff; Ellis, 1983; Gibbon and Raikes, 1995,50ff; Havnevik, 1993,50ff). In spite of the huge amounts poured into the agricultural parastatal companies during these years, there was little to show for it in terms of real per capita agricultural growth.

In Arusha region, NAPB/NMC purchases in absolute amounts showed an increasing trend from 16,630 tons in 1963 to 69,500 tons in 1978, but declined thereafter. Variations between specific years were enormous. For example, purchases fell drastically from the record level of 69,500 tons in 1978 to 1,000 tons in 1982 and 3,000 tons in 1984, only to recover in 1985 and 1986 with 36,000 and 46,000 tons respectively (Bryceson, 1993, Table III:2 – Table IV:1, 230-5). For most years, purchases from farmers in Arusha region exceeded local NMC sales of maize meal, the surplus being transferred to Dar es Salaam and to the food scarce central regions of the country.

The reasons for the huge fluctuations in NMC maize purchases are not entirely clear. Apart from statistical and recording errors and natural variations in harvests, the declining official producer price is likely to have negatively affected the willingness of farmers to sell to NMC. Real producer price index fell from 100 in 1963, when regulations started, to 28 in 1984 before rising slightly to 39 and 35 in 1986 and 1987 (Bryceson, 1993, Table III:4, 232). According to Ellis, producers received 45 per cent of crop sales value in 1970-72 and 38 per cent in 1978-80 (Ellis, 1983,222-5, in Bryceson, 1993,78). Low producer prices, transportation constraints, and delays in crop collection, input delivery and payments implied that many farmers, perhaps the majority, opted to sell their crops on parallel markets where prices were higher. They sold in smaller bulk to private traders or to consumers directly.

In an attempt to solve some of the rampant problems, the government reinstated farmers' cooperatives and unions in 1984 and assigned to them the task of procuring maize for the NMC, a system that mirrored that of the

1960s. As in the 1960s, high overhead costs continued to beset crop handling by the cooperatives (Bryceson, 1993,82-3). However, such costs were now perhaps less the result of localised interests by influential cooperative leaders and wealthy peasants, as had been the case with the earlier cooperatives, than of the deep recession of the Tanzanian economy and the central/political steering of the cooperatives. As argued by Putterman (1999b), the cooperative unions formed an additional level in the parastatal marketing chain, duplicating functions already performed by NMC and increasing neither competition nor efficiency. At the producer and into-store price set by NMC, cooperatives were often handling crops at a loss, which to a large extent depended on huge costs for transport and bank overdrafts due to late payments by the NMC (Bryceson, 1993,82-3).

Effects in Meru

Interviews in Meru reveal that many farmers with large yields sold a symbolic amount to NMC and stored the rest awaiting prices on parallel markets to rise before the next season. Sales to NMC were limited and justified on the basis of covering for the credit or purchase of subsidised farm inputs. Even so, this aspect provided little motivation since evading repayment of credit was easy. Big growers often assumed the role of middle traders buying crops from small farmers at a better price than that paid by the coop./NMC, then storing the crop until prices rose on the parallel market. One big farmer interviewed considered that selling to NMC was for 'emergency', in the case money was needed urgently for school-fees or for paying other debts. Cross-border trade with Kenya constituted another source of marketing and income for large producers and parallel marketers during this time.

When the terms for coffee cultivation deteriorated in the 1980s, many producers turned to food crop production for the market. In places such as Meru/Arusha, there were ample opportunities for parallel marketing and cross border trade of maize. There was also a good market for non-regulated crops such as beans, bananas, milk and vegetables owing to the large non-farm population in Arusha and on the estates. Many household members opted for business opportunities in the informal sector or migrated to Dar es Salaam. The constant shortage of consumer goods constrained but never

entirely strangled initiatives of producing for the market. People sought incomes and consumer goods from where they could but the constant scarcity of goods and the enormous difference between the official and black market price for basic goods and services left many people with a feeling of despair and pessimism about the future.

In Meru, consequently, the crisis was foremost one of declining cash incomes and shortage of consumer goods rather than one of food shortage. More than affecting the local supply of food, farmers' reluctance to sell their crops at loss to NMC negatively affected national supplies and caused the NMC to assume the role of distributing imported food to the urban population and to regions facing food deficits.

Local food production under economic liberalisation

In 1988/89, the government gave in to IMF/World Bank demands of allowing private entrepreneurs to participate in the trade of grain. The monopoly position of NMC was abolished. It assumed the role of being responsible for the Strategic Grain Reserve (SGR) and a buyer of last resort, setting a floor price on maize.¹¹⁹ The cooperative unions were free to buy and sell to any customer at any price (Bryceson, 1993,86ff). Private traders were at first restricted to buy crops from cooperative unions but reforms have since (1991) been extended to allow their full participation in markets and their purchase of crops directly from farmers (Bryceson, 1993,87; Van Buren, 1999,1069) .

Today's producer and consumer prices reflect the local and seasonal supply and demand situation as well as the prices for imports hauled by private traders to food deficient areas from other districts or from abroad. A large number of private traders have entered the market, operating in competition with one another and at different levels and scale of operation. Overall, transportation and marketing has improved, particularly in regions that already before were reasonably well supplied with infrastructure, while more peripheral areas are suffering from high transportation costs and non-availability of markets since the abolition of pan-territorial pricing and NMC

119 In October 1998, the SGR price at Arusha NMC was 80 TSh per kg maize while the market producer price was 120 TSh per kg. Personal Communication with the SGR Director, Mr Itaeli.

buying posts. In Arusha area, a larger number of marketing channels and sale opportunities and a more efficient marketing and transportation of crops are some of the positive results of liberalisation.

One major difference to the earlier situation is the complete removal since 1989/90 of subsidies for essential farm inputs causing a threefold increase of the real price of, for example, fertilisers in the 1990s. In Table 10.2 (at the end of the chapter) average annual consumer prices for maize and beans at Arusha and Tengeru markets are given, as well as prices for some essential farm inputs, collected at Tanzania Farmers' Association (TFA) retail shop in Arusha. Interviewed farmers gave prices for land preparation. In the 1990s, the local consumer price for maize and beans (and hence producer price) has declined in real terms suggesting that local availability of food has been sufficient (Table 10.2). Producer prices are 60-90 per cent of consumer prices depending on crops, season and traders' margins and costs. Small farmers with a limited surplus often sell directly to consumers at the local markets and get a better unit price than large-scale farmers selling to traders.

A low overall productivity

The district figures on maize (Table 10.1) suggest a low overall productivity. For 9 of the 15 years covered in the Table, productivity was within 1.1 to 1.8 ton per ha, or about 450 to 720 kg per acre (about 4 to 7 bags/acre). This is in accordance with farmers' own statements about common yields, as derived from the survey and from a number of informal interviews. According to the author's survey, those Meru farmers who were cultivating maize on the plains produced on average 4.7 bags (470 kg) per acre (about 1.2 tons/ha) in the 1995 season.¹²⁰ This figure tallies rather well with most annual estimates for the district but is less than half the official estimate for 1995 (3.0 ton/ha), which seems to be somewhat exaggerated. The East Africa average maize yield for 1993-95 stood at 1.6 tons per ha, which is slightly higher than the overall Africa average at 1.2 tons per ha (Byerlee, 1997, Table 2.1, 13). This figure, although low by international comparison, represents a doubling of the production since the 1950s (Byerlee, 1997, 18).

120 The survey estimates given refer to the about 300 households (of 753) who reported to have cultivation on the plains.

Table 10.2 *Current and real average prices (1989=1) (TSh) (%) for local food staples and farm inputs 1989-2000, Meru.*

Item/	Year	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
NCPI (1990=1)		1.0	1.36	1.75	2.14	2.67	3.56	4.57	5.53	6.42	7.24	7.81	8.28
Maize, current consumer price		1,000	950	1,050	1,150	1,100	1,150	1,700	1,400	2,500	2,500	2,400	2,080
Maize, real consumer price		1,000	609	600	537	412	323	372	253	389	345	307	251
Beans, current consumer price		1,500	1,700	1,800	2,000	3,000	4,000	4,250	5,000	9,000	8,600	5,900	5,800
Beans, real consumer price		1,500	1,250	1,029	935	1,124	1,124	930	904	1,402	1,188	755	700
Fertiliser (Urea)		497	520	615	1,720	5,300	5,300	7,500	10,800	11,100	12,500	11,000	11,000
Real price, fertiliser (Urea)		497	382	351	804	1,985	1,489	1,641	1,953	1,729	1,727	1,408	1,328
Hybrid maize (C4141)		830	830	1,200	3,200	3,800	-	-	3,400	3,700	5,200	6,750	6,750
Real price, hybrid maize		830	610	686	1,495	1,423			615	576	718	864	815
Land preparation (tractor)		2,750	-	-	4,000	4,500	4,500	6,500	9,000	9,000	15,000	10,000	10,000
Real price, land preparation		2,750	-	-	1,869	1,685	1,264	1,422	1,627	1,401	2,072	1,280	1,207
Hired labour (digging, weeding etc. per acre)									2,500		3,500	6,000	6,000
Real price, hired labour									467		483	768	724

Sources: Prices for fertilisers refer to a 50 kg bag of Urea at Tanzania Farmers Association (TFA) retail shop in Arusha. Prices for maize and beans refer to a tin, or a 'debe', of about 16 kg, and 20 kg, respectively. Data were collected at market site, in farmer interviews and from records at the Arumeru District Hq. Average price is the mean between maximum and minimum price. For maize, max. price data is missing for 1989, 1992, and 1993, and for beans, for 1993 and 1995. For beans, also the min. price for 1993 is missing. For these years a dummy value has been inserted being the average of the values of preceding and subsequent years. The general NCPI index (1989) used in the table is calculated from annual total (food + non-food) inflation rates presented on the Bank of Tanzania homepage: http://www.bot-tz.org/Statistics/qreviews/table1_21.htm. The weight of food prices in the general NCPI index is about 70 per cent and it has a slightly higher inflation rate than the non-food items in the index.

There is also considerable variation in total yields and productivity between different farmers. Except under extreme weather conditions, this variation is far greater than that between aggregate yields for different years. While nearly a quarter of the households cropped 0.5 ton or less per ha, the ten per cent most productive farmers reported to have harvested 2.5 ton or more per ha. There is also considerable variation in the application of chemical fertiliser. Between one and two thirds of the households (35-64 %) did not apply any chemical fertiliser at all when asked in 1995 and again in 1996. Of those who did, quantities varied from a few kg/acre to about 150 kg/acre (!) with a mean of about one bag (50 kg) per acre. On average, farmers who applied chemical fertiliser harvested 5.5 bags per acre (about 1.7 tons per ha) while those who did not harvested 4 bags per acre (about 1.0 ton per ha).¹²¹

A majority of households (85 %) stated that they were using hybrid maize seeds (1996) but only half of them purchased such seeds on a yearly basis. It is common to use HYV seeds for more than one year and to mix them with local varieties, although this reduces output. Unless combined with sufficient fertilisation, HYV seeds give only marginally better yields than local varieties.

Production constraints and conditions

From aggregate district data, it is not possible to detect any significant effects on production from the rapid increase in the price of fertiliser in the 1990s. Perhaps it is too early to observe such trends, given the crude methods by which production figures and yields are estimated, and the methodological difficulties of distinguishing the long term effects of modern inputs (or absence of inputs) from the short term variations in rainfall. Both aggregate data and survey findings, however, suggest that productivity in maize cultivation is low. A less than optimal use of farm inputs indicates the exist-

121 The difference is significant at 0.001 level when tested with T-test under the assumption of SRS (number of valid cases 307) indicating a probable significance also under the two-stage sampling design. In Singisi, where the majority of smallholders grow maize on the plains and where the sample was drawn by SRS, the difference is significant at 0.01 level (number of valid cases 173).

ence of an untapped potential for increased yields of basic food crops in Arumeru District.¹²²

The World Bank argues that fertiliser application is sensitive to the price for fertiliser and maize, and that price increments on fertiliser may negatively affect market production in more remote areas with difficult access to markets, but less so in areas where markets are available (World Bank, 1994a, 81-3). In Meru, however, interviews with farmers and extension workers indicate that the current price for essential inputs has a deterring effect on the frequency of application, and indirectly on the productivity. It may seem self-evident, but it is nevertheless worth emphasising that a strong correlation exists between the use of modern inputs and farmers' perceptions of yield improvement, as demonstrated in the cross-tabulations below (Table 10.3 and 10.4).

Country level data supplied by the World Bank shows that under the assumption of a constant per ha level of inputs and yields, the nominal cost for inputs rose from about 20,500 TSh in 1991 to about 115,700 TSh in 1998. In real terms, returns per man-day declined from 2,200 TSh to 500 TSh within this period (World Bank, 2000, Table 4.3, 47, and Table 4.2, 46).

Data compiled by FAO show that total consumption of fertiliser in Tanzania increased steadily from about 2,500 Million ton (Mt) annually during the early 1960s to 30,000 Mt in mid 1970s. Consumption remained fairly stable at this level until mid 1980s when it increased again reaching 51,000 Mt in 1990. From there, consumption has dropped, coming down to less than 28,000 Mt in 1998.¹²³ We do not have reliable data for fertiliser consumption in Arumeru District, but interviews with farmers suggest that

122 Potential production is commonly defined as the production that can be achieved under the ideal conditions of a research station, where yields of 6 to 7 tons per ha are common achievements. More realistic is to see present performance against what has been achieved by farmers under more favourable price and institutional conditions than those present in Arumeru District today. In Zimbabwe, for example, maize yields from the hybrid SR52 in 1990/91 ranged from 1.0 to 3.6 tons per ha depending on rainfall conditions. The best performing countries in Latin America average between 2 and 3 tons per ha (Eicher and Kapfuma, 1997, 33, Table 3.2; Byerlee and Heisey, 1997, 19). Yields in the mid-potential zones in Kenya in 1992/93 tallied with those of Arumeru. While the potential yield was estimated to 2.4 ton per ha, actual yield was 1.3 ton, reflecting on input constraints similar to those seen in Arumeru (Hassan, 1997, 87).

123 FAO statistics: <http://apps.fao.org>

their use of fertilisers has dropped, alternatively drifted from food staple crops and coffee to high value crops such as vegetables.

Next to shortage of land, prices for seeds, fertilisers and farm chemicals were by far the most frequently mentioned constraints to improved yields by households covered in the survey. The lack of fertiliser application is a problem particularly for land under annual crops (maize and beans) located in the high altitude zone above the coffee belt, but it also affects coffee and banana production as long as manure is not available in sufficient quantities. Often crop residues are removed from maize fields and used as cow fodder, thereby further reducing the capacity of the soil to withstand erosion and retaining nutrients.

For lowland plots, there was a more mixed response by farmers to the question of production constraints. To the price for inputs were added factors that reflect the fact that land holdings are distant, such as transport costs, lack of labour for proper weeding, inadequate timing of land preparation (ploughing) and planting, and so on.

In Tables 10.3 and 10.4 the results are given of crosstabulating farmers' statements about their regular use of chemical fertiliser and hybrid maize seeds with their perception of changes in maize yields *since they acquired the land*. The Tables refer to mountain dwellers' holdings of maize and beans on the plains and on the mountain. Farmers' subjective perception of changes in crop yields over time is as close as we can get to real longitudinal statistical data. Given the big range in age of the household heads, the period covered represents a time span stretching from a few years to several decades.

Table 10.3. *Regular use of chemical fertiliser and farmers' perception of changes in maize yields on holdings on the plains and on the mountain (columns in per cent of respondents).*

	Chemical fertiliser/ plains*			Chemical fertiliser/ mountain**		
	Yes	No	Total	Yes	No	Total
Increased yields	52	12	36	60	36	46
No change or a decrease in yields	48	88	64	40	64	54
Total	100	100	100	100	100	100

* Valid cases 292, missing 461 (Cramer's V = 0.41, Chi² < 0.000). ** Valid cases 252, missing 501 (Cramer's V = 0.24, Chi² < 0.000)

The Tables reveal statistically significant correlations between the variables. Together with informal interviewing, they confirm the importance of modern and affordable inputs for yield performance. As for fertiliser use on the plains, the correlation, measured as Cramers'V, is 0.41, while on the mountain it is 0.24 (Table 10.3). The lower correlation on the mountain is probably due to the more frequent use of cow manure on maize fields there. In a relative sense, this reduces the significance of purchased fertiliser for farm output compared to the situation on the plains.

The correlation between use of hybrid seeds and yield performance is 0.21 on the plains while on the mountain it is 0.46, again confirming the importance of modern inputs for raising yields (Table 10.4). This stronger correlation on the mountain is possibly because the more reliable rainfall and better fertilisation there facilitate some of the advantages with hybrid seeds.

Table 10.4. *Regular use of hybrid maize seeds and farmers' perception of changes in maize yields on holdings on the plains and on the mountain (columns in per cent of respondents).*

	Hybrid maize/ plains*			Hybrid maize/ mountain**		
	Yes	No	Total	Yes	No	Total
Increased yields	45	26	37	68	22	56
No change or a decrease in yields	55	74	63	32	78	54
Total	100	100	100	100	100	100

*Valid cases 292, missing 461 (Cramer's V = 0.21, Chi² < 0.000). **Valid cases 251, missing 502 (Cramer's V = 0.46, Chi² < 0.000)

Our data show that regardless of environmental context the use of modern inputs enhances yields. On the drought prone plains, chemical fertiliser seems to be a more decisive determinant for yield performance than hybrid seeds, while on the mountain, where rainfall is reliable and supplementary fertilisation occurs from cow manure, the use of hybrid maize has a relatively stronger impact on the result.

It must be emphasised, however, that the adoption and application of modern inputs, albeit crucial, are not the only measures that may enhance yields. To a considerable extent, raising yields is a management problem that includes soil and water conservation, efficient tillage, organic fertilising

and nutrient recycling, weeding, plant spacing and so on. For example, as reported by RELMA, field trials in Arumeru District show that maize yields may increase with as much as one ton per ha from tillage methods that improve water infiltration and allow plant roots to penetrate the hard pan that tend to develop some 15-20 cm below the soil surface after many years of conventional ploughing (RELMA, 2001, 17). Jointly with modern inputs, improved management may have a dramatic effect on yields.

Whether the farmer will find these measures attractive, practical and affordable is a rather complex issue. What can be said is that, apart from a number of institutional constraints, the current price increases for chemical inputs, notably fertiliser, and the generally low producer price and profit margin for maize in the 1990s, are hardly the kind of factors that promote the attention by households to the surplus cultivation of food staples and make them reach the full potential of the land and other production factors.

Institutional bottlenecks

Just as market and climatic uncertainties may deter farmers from allocating more efforts to food crops, uncertainties with respect to land tenure may have the effect of discouraging long term investments in land productivity, as discussed by, for example, Havnevik (1999). We met several farmers involved in ownership disputes over land originating from the villagisation campaigns of the 1970s. These disputes are limited to the plains and are common in places such as Kikwe and Karangai south of the mountain. On the mountain, some households cultivating steep lands adjacent to protected forested hill caps experience uncertainty of tenure preventing them from undertaking long-term investments such as conservation structures, as reported by Assmo (1999).

Generally, however, customary tenure on the mountain seems to be no obstacle to land investments. In spite of numerous land conflicts concerning inheritance and boundaries, there is no perception of insecure tenure of the kind seen in the villages formed under the villagisation campaign. By the majority of Meru, customary tenure is recognised as a legitimate form of tenure, and one that hitherto has been compatible with agricultural intensification. We should add the comment, however, that customary tenure does

not recognise women as landowners, hence probably constraining the willingness and capacity of women (especially young widows) to invest in the land they cultivate.

The present state of water for irrigation well illustrates the situation of a yet untapped potential for increased production. At the foot of the mountain, water is a scarce resource and has been subject to conflicts between users since colonial times.¹²⁴ Half a century later, with a manifold increase in the number of water users, less than half of the area possible to irrigate in the district is irrigated, and inadequately so (Uliwa et al, 1996, 9). In addition, there is a great loss of water from seepage and leakage due to improper or non-existent channel maintenance, inefficient allocation schemes, etc. Such factors may result in a 40-50 per cent loss of the total water flow between two dividing points.¹²⁵

In the 1990s, rehabilitation of roads has occurred in Arumeru, notably involving the upgrading of the Nairobi-Arusha-Dar es Salaam main road. Nairobi, Tanga and Dar es Salaam can now be reached within 4-6 hours, a circumstance that has increased the marketing potential of Meru agriculture tremendously. However, the poor state of smaller roads and feeder roads are still constraining access to markets for many households. Villages on the upper reaches on the mountain, for example, are inaccessible during the rainy season except with four-wheel drive vehicles. Milk and vegetables are carried on heads and shoulders or on bicycles and wheelbarrows to the main road. Similar or worse conditions constrain market production on the plains where a market potential for vegetables and fruits exist in areas under irrigation.

A consultancy study in 1996 concluded that considerable potential for increasing smallholder income exists in the area below the mountain, given improved institutional and other conditions both in relation to irrigation and generally, e.g. better provision and affordability of high quality seeds

124 See for example TNA file 69/246/AR/I, 'Water Affairs' containing records on water conflicts and petitions from settlers for more water. In a memo to the Province Commissioner in 1947, the Arusha District Commissioner considered wastage of irrigation water "appalling". Source: TNA NA/1, Native Affairs General, 1946-54. Memo on the political, agricultural and veterinary state of Arusha District, from District Commissioner to Province Commissioner, dated 4 November 1947.

125 Personal communication, Mr L.M. Lokissa, District Irrigation Officer, Arumeru, and coordinator of TIP (Traditional Irrigation Improvement Project).

and other inputs, timing of production with market demand, promotion of local processing industries, savings and credit schemes etc. (Uliwa et al, 1996).

Price developments on food staples and agricultural inputs

Along with declining real consumer prices for maize and beans in the 1990s, indicating there is sufficient food in the district, the producer price and producer profit margins have also declined (Table 10.2).

Despite a series of harvest failures due to drought in the district during the 1990s, notably in 1992 and 1999, these have not caused food prices to rise. In real prices, the consumer price for maize was in 2000 only 25 per cent of the price in 1989. Sufficient food (maize) has reached local markets from outside and since prices on the world market have declined, also local consumer prices (and producer prices) have remained low (Table 10.5).

This indicates that when local production falls short due to lack of rain, Arumeru District and Arusha town are well supplied with maize from the other grain producing districts in Arusha region, such as Babati and Hanang Districts, or from abroad. But free markets may also cause farmers to look for more rewarding income options, given the high price for farm inputs. Alternatively, they will reap what they can get from the land without modern inputs, hence producing far below what the land can yield under more favourable conditions from the perspective of the producer.

Table 10.5. *World market price for maize 1993-99 (in USD per ton)*

Year	1993	1994	1995	1996	1997	1998	1999	1999/Q4
USD/ton	137.20	145.00	123.00	165.00	117.00	102.00	90.30	86.10

Source: Bank of Tanzania: http://www.bot-tz.org/Statistics/qreviews/Table6_2htm, downloaded in January, 2001. The Bank refers to IMF sources and to the Mombasa Auction price. Figures for 1999 and for the fourth quarter of 1999 are provisional.

Also the real cost for land preparation/ploughing by tractor (and oxen) has remained constant or decreased during the 1990s. Data for the cost of labour is more difficult to obtain, since the price for farm labour varies over the season, depends on the task, and moreover, is flexible and subject to ne-

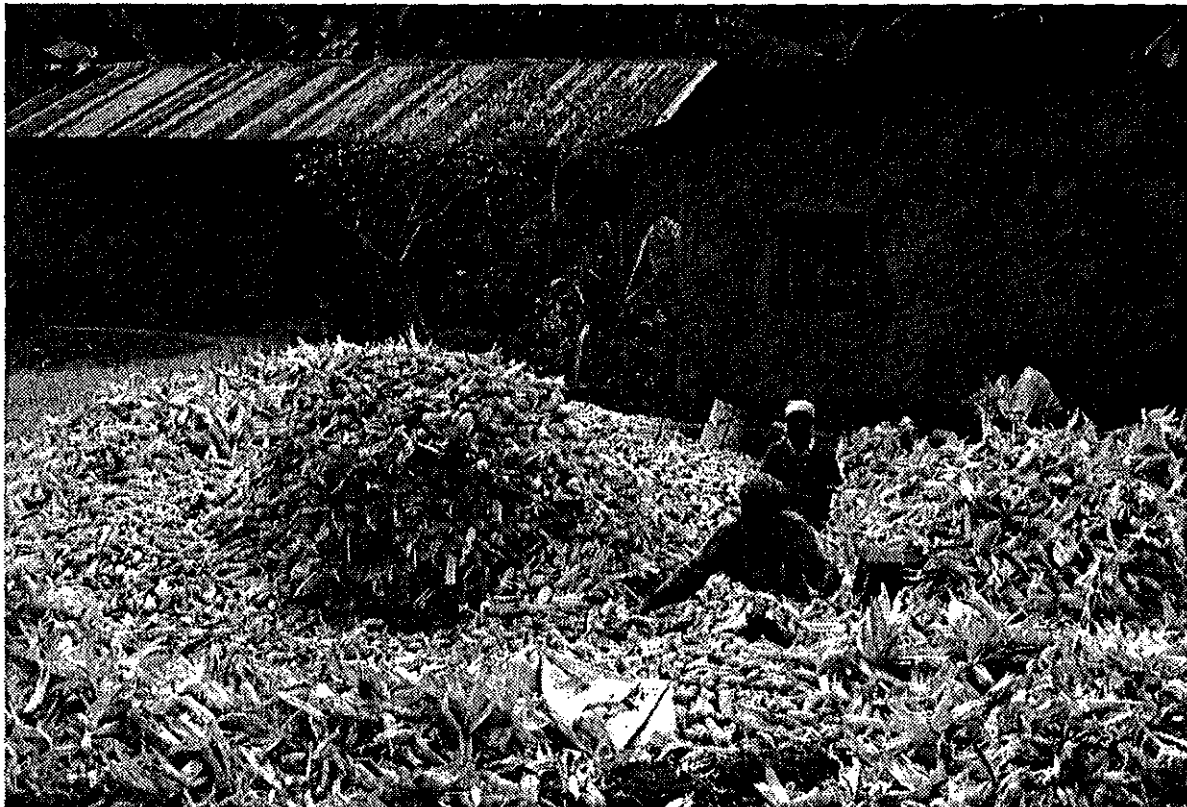
gotiation and so on. From what we could learn, the real cost of hired labour has remained about constant, or possibly decreased somewhat during the 1990s. This is a plausible scenario given the falling consumer price for food. Data for cost of renting land is difficult to estimate. For most households holding land under customary tenure, the cost of the land is not incurred as a cost of production. Generally, rented land in the coffee-banana belt is too expensive to motivate the cultivation of maize and beans. For high value crops such as tomatoes it may still pay off, however.

Most households seem to pursue a cautious, pragmatic and flexible approach to cultivation of food crops. Their cultivation of maize and beans is for subsistence purposes mainly, with the option of producing a small surplus for sale. In addition to paying for land preparation (ploughing) and hired labour for weeding and harvesting, and transportation of crops to the village, which all are expenses difficult to avoid, some farmers may add fertilisers or hybrid seeds. Total cost of production per acre may be in the range of 15,000 to 45,000 TSh (1996) depending on the amount of hired labour, type of land preparation and use of purchased inputs (own labour and cost for the land not considered).

In 1996, for example, the maize producer price was down to about 4,000 TSh per bag after harvest but increased steadily thereafter, reaching 10-12,000 TSh in the months before the next harvest in 1997. Beans started at 4,000 TSh per bag in the post-harvest season but reached at least 30,000 TSh before the next harvest. With an average production of 5 bags of maize and 2 bags of beans per acre and household, gross average incomes may have been in the range of 28,000 to 120,000 TSh per acre, provided all of it was sold. On the other hand, given that three quarters of the households cultivating on the plains or on the mountain in 1995 did so on land that was two acres or less in size, and that the annual consumption for a family of two adults and four children is about 5-7 bags of maize and 1-2 bags of beans, the surplus that is left for sale is often rather limited.

These are average figures, however, which obscure a great variation in crop yields between households and different years. Some households may experience crop failure due to drought or untimely planting or weeding. Others may be able to reap a good crop without chemical fertiliser, the soil being replenished with nutrients through the annual flooding of many of the streams and rivers that fan out on the plains. The common predicament

for most households, however, is uncertainty about the outcome. Given the climatic uncertainty on the plains, and the generally weak price incentive structure for producing food crops for the market, few households seem inclined to or capable of allocating a major share of their capital and labour resources in the risky attempt of trying to raise their total output of food staples.



Photograph 10.2: At their Singisi homestead women remove the maize seeds from the cobs following the harvest on the plains in September.

Important for investing in production in this situation is the fallback situation of households. What are the other income options and alternative crops? Most of the expensive farm inputs and scarce labour resources go to crops and activities that are considered the most profitable, e.g. milk and vegetable production, off-farm incomes etc. Hardly any farmer would risk his/her position and the wellbeing of the family for the option of a year of good profits in food crops. However, with sufficient incomes and security provided from other sources, a farmer may invest more in food crops reaping good profits also there. One farmer interviewed, for example, employed in the administration and having a good income from milk to fall back on,

grabbed the opportunity of borrowing a 20 acre plot for beans in drought prone Malula near Kilimanjaro airport in 1998. While many farmers experienced that their food crops were swept away by heavy rains during this year, this particular farmer harvested 60 bags of beans each fetching 20,000 TSh on the market. After deductions for inputs, labour and transport, there was a net profit of at least 800,000 TSh (about 1,200 US \$).

It is important to recognise that while market and institutional conditions are crucial for overall farm performance, there are other social and economic factors at play influencing and explaining the variation in outcome between different households. While some households are in a position to bear a high risk for the possibility of greater profits later, many households have no such margins at all and are bound to prioritise security at all instances. To some extent, subsistence farming as a fallback option as well as other farm alternatives is dependent on land availability. For a growing number of households, land is a constraining factor, reducing their fallback options in farming and making them, for better or worse, dependant on incomes from outside farming. In the following chapters, we will deal more with how household characteristics (e.g. gender, age, life cycle position, educational level, household size etc.) influence income options, looking at the role and consequences of off-farm incomes and household inequality.

Food supply trends and food security – concluding comments

In this and the preceding chapter we have seen how interventions by the government have influenced the scope and content of farm intensification in different ways. The present rapid adoption of horticulture and garden farming, for example, does not only reflect a strong urban demand and a road transport network that from parts of the district can bring the produce to the consumers before it deteriorates. It is also the result of a high relative price for farm inputs deterring farmers' interest in traditional cash crops such as coffee, or preventing productivity increases in food crops such as maize and beans.

Households have adapted to these changes in various ways, i.e. by shifting emphasis to different components, such as vegetable cultivation or off-farm work, within a diversified livelihood framework. For the overwhelm-

ing majority of households, food security does not rest with production of subsistence crops alone. What has made adaptations to growing population densities successful in Meru in the past is the fact that households have partly shifted into high value crops and off-farm incomes when these have generated better overall returns to land and labour. However, they have retained a number of subsistence fallback options, the most important of which is cultivation of maize and beans on the plains and on the upper mountain reaches, as well as of bananas in the coffee-banana belt. Own subsistence crops have helped them endure periods of market contraction. At the other end of the diversity scale, production of cash crops and milk, and off-farm employment, have helped them across years when subsistence crops have yielded less well.

In the absence of a formal insurance system against crop failures and of a price and credit system that could compensate for some of the uncertainties associated with cultivation in drought prone surroundings or where markets are uncertain, diversification of incomes and security of production rather than risky maximisation of yields seems to be the preferred strategy. As it is, most households grow maize and beans for subsistence and for security reasons with a below optimal input use. This takes place on land of less productive potential and where there are few alternative uses except grazing. They allocate their main effort to other farm and off-farm activities that provide higher returns to labour and land.

The Meru population that is resident on the plains experiences a more difficult situation with respect to food security than does the population on the mountain itself. This is due to the frequent occurrence of drought and farmers' greater dependence on food crops and free ranging livestock on the plains. Where irrigation facilities have been developed, as in parts of Kikwe, Karangai and Mbuguni villages, for example, farmers have adopted more profitable kinds of cultivation (e.g. vegetables) while reserving their non-irrigated land for subsistence crops such as maize and beans. For the majority of the population on the plains, a more favourable situation with respect to output and input prices and credit for food crops would probably have a rising impact on their living standards and incomes, at least until prospects of more profitable forms of land use can be achieved through extension of irrigation systems and improved access to markets for perishable high value crops.

In the absence of detailed and reliable statistics about long-term production trends and productivity achievements, as well as of imports and exports of crops, our picture of food production in the district is burdened with uncertainty. Circumstantial evidence of the kind we have tried to put together in this chapter suggests that food production has kept pace with population growth for most of the last century. Productivity (*yields/ha*) has increased as cultivation methods have intensified under growing population pressure and as modern inputs in farming have been introduced in order to generate a surplus for the market. In spite of relatively good physical and infrastructure conditions, these measures, however, have not generated a broad Green Revolution type of leap in staple crop yields in Arumeru.

It is possible that per capita production levels have stalled or even decreased in recent years following a less favourable price incentive structure on food crops and due to constraints bearing on the institutional and management aspects of staple crop production. This does not mean that food security has been reduced. Maize, for example, appears to be imported into the district in sufficient quantities and real consumer price for maize and beans have declined during the 1990s.

The view forwarded by the Director of the Agriculture and Livestock Office in Arumeru, Mr D.M. Rugangila, quite well summarises the present situation and future challenges. According to Mr Rugangila, food production in the district has in the past been ahead of population growth. Feeding the population and raising rural quality of life in the years ahead will, however, require continued efforts towards resource conservation; improved and more efficient use of already existing technologies and farming practices, supported by policies that are favourable for agricultural production and marketing.¹²⁶

One can add, in view of the current situation of land shortage, the parallel need for efforts to increase household incomes in the off-farm sectors as well. What the past decades indicate is a possibly larger reliance on cash incomes by individuals to cater for their families' food needs. Although most households attempt to produce some crops for own consumption, the self-provisioning element in farming appears to be declining.

126 Personal communication, February 1997.

First of all, there seems to be limits as to the absolute size of production that can be achieved. This is on the basis of the current shortage of land, the climatic vagaries on the plains, the price incentive structure of producing for the market using modern farm inputs and the amount of labour households are prepared to allocate to food production under these conditions. Second, households' demand for cash income has increased substantially since markets were liberalised. This means that households nowadays devote a larger share of their labour to activities that give quick and in the short run more secure returns in cash than food crops do. Many households now seem to sell a larger portion of their harvested staple crops than they did before the economic reform programme, and a majority of the households are buying food at the market in order to supplement own yields. Four households in five reported to have purchased staple foods (maize, beans, or bananas) at the local markets in the year preceding the survey (1994), although this by no means was a year when own yields were low. Three quarters of the respondents stated food items to have constituted their major cash expenditure during the year before the survey.

For these households, food security is in whole or in part met from purchases of staples on the market. In a situation where the scope for food security through subsistence production is limited due to shortage of land and labour, the ability for households to obtain cash for buying food is dependent on their sale of attractive market crops (e.g. milk and vegetables) and, increasingly, on opportunities of earning income from outside farming. Economic liberalisation has increased cash expenses for households for a number of items, a circumstance that is frequently voiced by respondents through views that 'life has become very expensive and money is needed for everything'. However, liberalisation has also increased opportunities of earning income from off-farm activities, a trend that has gained further momentum by the proximity of Arusha town and its dynamic markets.

Against what has been said in this chapter, a cautious conclusion is that, generally speaking, households' entitlement to food has improved in the 1990s thanks to the creation of new income options. Some of these options include an increase in the urban demand for local high value crops and farm produce. Most income earning opportunities, however, seem to have been located in the non-farm sector. The combination of expanding income opportunities, relatively stable salaries and declining real prices for staple food

crops indicates that food security may have improved in the 1990s, also for households that are poor in terms of farm resources and who depend on off-farm incomes.

Responding to crisis and opportunity: diversifying livelihood and incomes

Introduction

In this chapter, we will outline the main traits of off-farm activities at a time when economic liberalisation and mounting population pressure on farmland are fundamentally reshaping the living conditions on the mountain, answering the questions whom, why and to what extent households get involved in off-farm activities. Thereafter, in the next and final chapter of Part II, we will explore the links between agriculture and off-farm activities.

Trends in off-farm incomes

Important and crucial issues concern changes over time in the extent to which household members work off-farm and the significance of off-farm incomes in the household economy. In the absence of longitudinal data on the former, we will refer to circumstantial evidence to support the hypothesis that opportunities for off-farm work have expanded in the last decade, that household members devote more of their time to off-farm activities now and that the income generated this way has increasing importance for their livelihoods, living standards and food security.

In less than two decades, there has been a formidable explosion of business activities in and around local market places such as Tengeru and Usa

River. Traders, shop owners and migrant workers from far away are moving into the area, and as a result land prices in the surrounding villages have rocketed. Yet another commercial centre is emerging in Mbuguni area around the burgeoning gemstone mines at Semanjiro/Mererani, located some 30 km south of the mountain. This is a veritable 'Klondike' that attracts large numbers of fortune seekers from all over the country. It serves as an outlet for farm produce from the mountain and as a generator of off-farm income opportunities. The triangle Meru-Arusha-Mbuguni constitutes a viable circuit for trade and circular migration, into which increasing numbers of people from the mountain are entering, especially youth.

The booming activity at the Tengeru and Usa River townships and markets well illustrate the tremendous change in economic activity that has occurred in the last 10-15 years. Both Tengeru and Usa River are feeder markets to the Arusha market, and to the markets in Tanga and Dar es Salaam. Tengeru market was established in 1955 as a Native Authority market after the Tengeru Coffee Estate surrendered land (see Chapter Four).¹²⁷ Tengeru market is strategically located next to the tarmac road to Moshi built in 1953 and it has since developed into the main crop and consumer goods market in Meru. Urban traders collect crops in Tengeru and Usa River and in turn sell consumer goods such as clothes and household utensils to local people.

Air photographs from 1972 show a central market hangar (built in 1959/60) in Tengeru surrounded by a few permanent buildings and with plenty of space around it for expansion.¹²⁸ The first residences appeared in 1966/67.¹²⁹ Since mid 1980, the number of residences, shops, bars and market stands have exploded, making Tengeru a very congested place, confined as it is between the main road on one side and coffee estates on the three others. The number of vendors has increased substantially during this period, and in recent years traders have established themselves outside the main

127 TNA file: 69/2 'Native Markets' containing documents signed by mangi Sylvanus Kaaya on October 3, 1955, and correspondence between District and Province Commissioners on markets.

128 Series GS 1-8, Arusha 1972, Bureau of Survey and Mapping, Dar es Salaam

129 Interviews: Patandi VEO Mr Amos B. Mwari, Ward Councillor Gabriel M. Kaaya, and Miss Ertha Nicolous Kaaya, a teacher. They all gave ample illustration of the growth of Tengeru market.

market place, around the bus stand and along the road leading up the mountain from the district hospital just north of Tengeru.

In 1975 there were six shops, two butcheries, three bars and one petrol station at Tengeru. Today, there are more than 100 shops, 60 bars and small restaurants, plus a number of tailors and other craftsmen operating outdoors. In addition, there are 11 workshops, 12 butcheries, 4 private dispensaries, 4 pharmacies, 4 veterinary shops, 4 shops for cattle feed, plus a large number of private lodges and residences. More than a thousand traders assemble on market days, twice weekly.¹³⁰ According to one of the tax collectors at Tengeru market, in 1990 there were about 150-300 vendors per market day. In 1998, the number had increased to 1,000 – 1,300 sellers per day. And a growing number of vendors sell outside the designated market area, along roads etc.¹³¹

The main upsurge in market activities has occurred since economic liberalisation, boosted by the greater availability of consumer goods and by the growing demand for local agricultural produce by external traders. Fortune makers and businessmen from the burgeoning gemstone mining industry at Mererani invest their money in real estate such as shops, hotels and businesses in Tengeru, Usa River and Arusha. Tengeru nowadays attracts business people and traders not only from Arusha but also from Mbuguni, Moshi and Dar es Salaam.¹³²

A similar development has taken place at Usa River, some 5 km to the east of Tengeru along the main road. The market there has a long history as a place where local farmers, settlers, estate workers and Asian traders have made business in crops and other goods. Jointly with the railway station in Tengeru, Usa River was an important trading centre and railhead for crops exported from the district during colonial rule. In 1975, Usa had the biggest market in Meru but has since been surpassed by Tengeru, and by Kikatiti further to the east. At that time, there were about ten shops and two butcheries at the market place. Today there are more than 100 shops and 12 butcheries, apart from hotels, lodges, petrol stations, restaurants, and a post office. Also here the main expansion has taken place after 1985.¹³³ In the

130 See previous footnote.

131 Interview with Lightness Issangya, assistant secretary in Akheri Ward and tax collector at Tengeru market.

132 See previous footnotes.

1988 census, the Usa River population amounted to about 5,500 people but has grown considerably since then (United Republic of Tanzania, 1991,418).

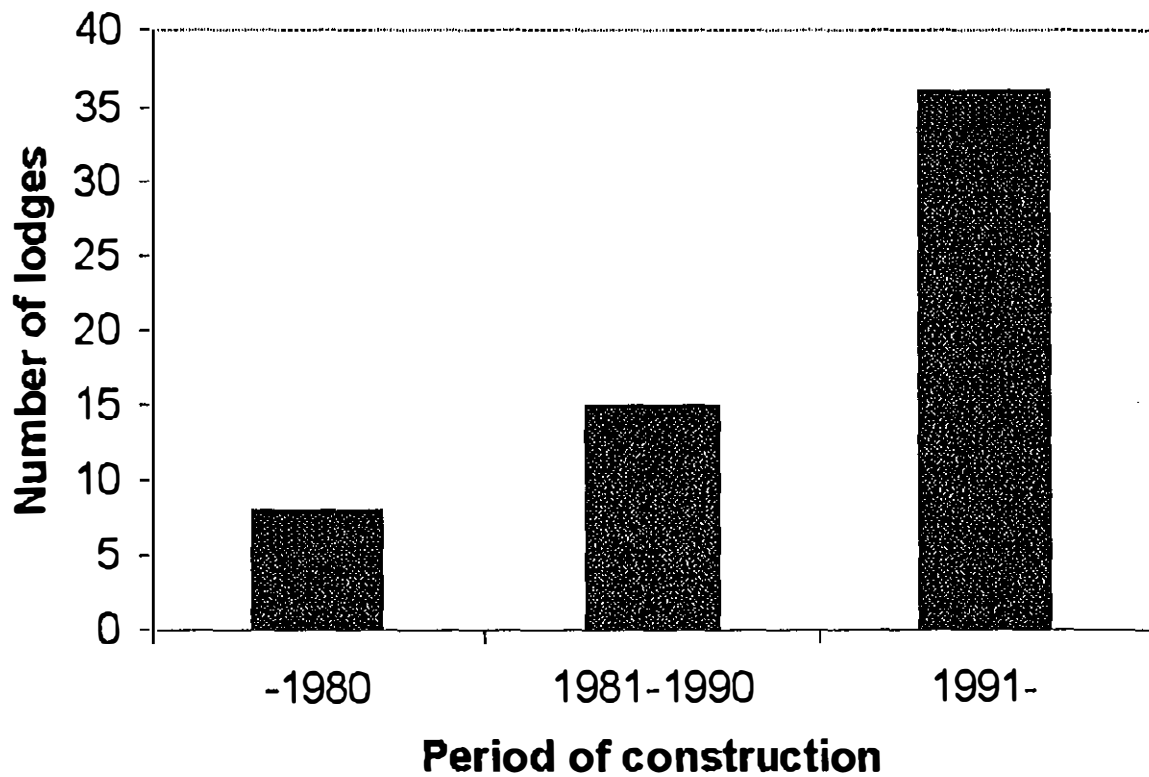
Changing land use from farm to off-farm

Near Tengeru and Usa River townships, as well as near the outskirts of Arusha, many farmers have discovered that land has greater value for building and business purposes than for agriculture, a finding that gives further evidence to the expansion of these townships and the immigration that occurs into the area. Of the 47 farmers who in 1995 and 1996 up-rooted coffee in Singisi village, 13 did so in order to build living quarters, or 'lodges', for immigrants and temporary residents in the village. In February 1997, a census revealed the existence of 59 such 'lodges' in the village containing 84 living quarters and housing a total of 222 people. Most lodges were built in the 1990s (Figure 11.1), driven by a demand for accommodation among migrants employed or doing business in Tengeru township or Arusha town. The rapid increase in the demand for accommodation and influx of migrants to the area coincides with the period for economic liberalisation.

Similar developments are occurring in other villages surrounding townships like Usa River and Tengeru. A rapidly expanding local economy and excellent road communications give farmers in Singisi and the other villages around Tengeru a strategic position for making money out of their land by providing cheap and accessible accommodation. For the landowner, a lodge requires relatively little space but has a much higher return to capital and labour than any conventional land use.

133 Interview in October, 1998 with Joseph A. Ndonde, Village Chairman, Usa River and District Councillor, Arumeru.

Figure 11.1: *Number of 'lodges' recorded in February 1997 and period of construction, Singisi village.*



Taken together, the developments described should give sufficient support to the hypothesis that opportunities for earning incomes for household members in Meru have increased substantially following economic liberalisation. We intend to demonstrate below that in addition to these changes, shortage of land for farming compels household members to increase incomes from sources outside their farms. Perhaps equally important, however, are individuals' aspirations, dreams of material progress and hopes of improved wellbeing, which influence them in the direction of seeking off-farm activities. This attitudinal change is most clearly distinguishable among younger households.



Photograph 11.1: *In the 1990s, many Singisi farmers have built 'lodges' for accommodating migrant workers seeking employment in the nearby townships and in Arusha.*

Who is doing off-farm work? The significance of land shortage

We found that half (50 %) of the sampled household heads had been involved in some kind of off-farm activity in the year preceding the survey, and that for one third of the heads (36%) off-farm work was their main occupation (i.e. demanding most of their working time). Among household heads below 65 years of age, whom we somewhat arbitrarily have defined as economically active¹³⁴, these proportions are higher, 60 and 43 per cent, respectively. For more than one third of the 'economically active' households (38 %), the main cash income source came from outside farming, a finding that gives testimony to the economic importance of off-farm incomes. Then, who are the households and individuals involved in off-farm incomes?

One category of households can be immediately classified: the landless. Complete landlessness in the sense of being denied access to *any* land for cultivation including land off the mountain is, however, a rare occurrence and the case for only about one per cent of *all* households covered in the survey. It is somewhat more frequent in the villages near the main road and around Tengeru township. In Singisi, for example, landlessness is the case for about four per cent of the households. Landless households, however, are mostly immigrants or temporary residents who are attracted by the nearby opportunities for employment or business activities. Very few of them are of Meru origin.

Save for the situation of complete landlessness, it is difficult to establish a per se threshold size of land, below which households are compelled to live from off-farm incomes. Size is a relative concept and what is small depends on the context, e.g. ecological endowments, the level of farm intensification, availability of household labour, individual aspirations, household consumption needs etc. What, then, can we say about the impact of land shortage on the likelihood that a household relies on off-farm work as its main source of income?

First, we should say that although the average size of mountain farms differs between villages, there is no statistically significant association between geographical location and household incidence of off-farm incomes, as one perhaps would have expected. One reason is that households' access to additional land on the plains to some extent levels out differences between villages in average farm size. It is data at the individual and household levels, primarily, that informs us about the current pattern of off-farm activities.

In Table 11.1, we can see how the size of the farm (including land on the plains) correlates with households' main income source, so that the smaller the size of the farm (i.e. the size of land cultivated), the larger the share of households earning most of their income from off-farm sources. It seems as if land below the size of 0.5 acres radically increases the propensity for

134 This division is to some extent artificial. However, it was found that households above this age, although still being the formal owners of land and many of them still involved in managing the farm, increasingly depend on remittances in kind or money from children, have begun to divide their land among sons, or have their shambas cultivated by grown up children who live nearby. By excluding these elderly households, it is possible to concentrate on those households that by their own account are responsible for their reproduction.

households to earn most of their cash incomes from off-farm work compared to households with access to land 0.6 acres in size or larger. At the time of the survey, we found that about 12 per cent of the households had access to less than 0.5 acres of land. 'Land' thus defined includes holdings on the plains and on the high mountain slopes, as well as land that is rented or borrowed.

On the mountain itself, where land is of high potential, about 16 per cent of the households have holdings of 0.5 acre or smaller. In Singisi, where land is exceptionally short, about one third of the households face this predicament, a situation that is somewhat eased by most of them having access to complementary holdings on the plains.

Table 11.1: *Size of total land cultivated (farm size) and households' main source of income. Columns in per cent of respondents**

Main income source	Total land cultivated (farm size)					Total
	- 0.5 acres	0.6 – 1.0 acres	1.1 – 2.0 acres	2.1 – 4.0 acres	4.1 - acres	
Off-farm	74.7	43.8	34.5	23.9	24.4	35.4
Farm	25.3	56.2	65.5	76.1	75.6	64.6
Total	100.0	100.0	100.0	100.0	100.0	100.0

* Total cases 753, missing 4. Chi² 0.000.

On the basis of these figures, we can conclude that a substantial number of households are endowed with so small holdings that they are in practice only able to draw a marginal cash income or subsistence production from their land. Such households are 'in practice' or 'functionally' landless. Given the varying potential of the land accessed by households, the proportion that is 'in practice landless' is perhaps 15 per cent of all households. It should be noted that the Meru residing in the townships of Tengeru and Usa River, for example, are not included in this figure. The population in these townships partly reflects an ongoing exodus from rural areas into urban places due to insufficient size of holdings and for other reasons.

It is true that some households have compensated for the low profits for 'traditional' export and staple crops by shifting into short term or high value crops (vegetables) or dairy farming, responding to the urban demand for

such produce, as we have seen. Such measures can also be seen as a response to shrinking land holdings. And we should take note of the observation that a quarter of the households in the 'landless' group in the Table derive most of their incomes from farming. Own account farming of, for example, vegetables, as well as dairy farming, has a lot of attraction. However, to most people in this group, farm size is insufficient, the labour requirements in farming too demanding and the market too uncertain so as to risk ones own and the family's wellbeing by concentrating labour and other resources to one source of income alone.

Although few are willing to give up farming completely, under the circumstances a growing number of household members find it economically more rewarding to allocate the bulk of their time and labour to activities outside their farms than to intensify farming on small fragmented holdings. It is, for example, illustrative that, in terms of income, those who deal with the collection, transportation and reselling of milk are doing better than the average milk producer.

It is plausible that at a certain small size of the farm, the effort or capital required for producing crops or milk from that land is deemed too high compared to the rewards from off-farm work, also when we consider the social or emotional attachment to the farm by the owner and the personal satisfaction of working on one's own land. A large number of people face precisely this situation: the land they have is so small that the homestead takes up most of the space available. The size of the land can therefore be hypothesised to be a decisive factor for the propensity of working off-farm.

From the Table we can make another observation, namely that above the farm size of four acres, the proportion of households relying on off-farm incomes does not decline but is the same as in the group immediately below. A cautious suggestion is that income diversification constitutes an important livelihood and accumulation strategy for households which are well endowed with land resources. We will leave this possibility aside for the moment in order to look at some other factors that may explain why households explore off-farm income sources.

The role of education

Historically in Meru (and elsewhere), education has served as an important inroad to a regular and formal off-farm employment. It is therefore natural to examine if the educational level of the household head has any impact on the livelihood orientation of the household. For simplicity of analysis, we define educational level as either 'Primary education' or 'Secondary education' depending on whether the number of years spent in school is seven years or below or above seven years. From Table 11.2, we can see that 'Secondary' education of the head increases the propensity that the main income source of the household is located outside the farm.

Table 11.2: *Main income source of household and educational level of household head. Column in per cent of respondents.**

Main income source	Educational level		Total
	Primary	Secondary	
Off-farm	32.3	49.4	35.4
Farm	67.7	50.6	64.6
Total	100.0	100.0	100.0

* Total cases 753, missing 3. Chi² 0.000.

Looking at the association between farm size and off-farm incomes in the light of education, we can see that farm size matters regardless of educational level but that the association is stronger for household heads with low education. For simplicity, we have dichotomised the farm size variable at 0.5 acres. The results are given in Table 11.3.

Table 11.3: *Main income source and farm size (size of land cultivated) by educational level of household head.*

Households with Primary education:

Main income source	Farm size		Total
	-0.5 acres	0.6 + acres	
Off-farm income	73.7	26.6	32.3
Farm income	26.3	73.4	67.7
Total	100.0	100.0	100.0

Total cases 607, missing 2. Cramer's V 0.33; significance test 0.000

Households with Secondary education:

Main income source	Farm size		Total
	- 0.5 acres	0.6 + acres	
Off-farm income	81.1	46.1	49.4
Farm income	18.9	53.9	50.6
Total	100.0	100.0	100.0

Total cases 146, missing 2. Cramer's V 0.20; significance test 0.009

Examining the impact of educational level on income source when controlling for farm size confirms the importance of farm size for the livelihood orientation of the households. When the size of the farm is below 0.5 acres, the correlation between education and income source becomes negligible (Cramer's V 0.05) and statistically non-significant (Chi^2 0.43). Only, when the size of the farm is larger, however, does higher education increase the probability that households obtain most of their cash incomes from outside the farm (Cramer's V 0.17, Chi^2 0.000).

The role of age related factors

We need, however, to study the 'push' effects of land shortage in the light of additional factors. For example, does the age of the household (head) influence its livelihood orientation? In Chapter Four and Five, we concluded that land fragmentation was leading to miniature holdings for the young generation. On the basis of a higher proportion of 'landless' households in this group we can expect that a larger proportion of young heads are involved in off-farm activities compared to old ones. On the other hand, for elderly households, and for old widows in particular, holdings are small due to land subdivision to heirs. What does small land size mean for these different household categories in terms of off-farm activities?

Cross-checking with the age of respondents, we find that the correlation between land size and income source is stronger for the younger age groups than for the older. For simplicity of illustrating this finding, we have tripartited the age variable at 40 and 60 years of age (Table 11.4).

The resulting cross-tabulations confirm that farm size explains a great part of the variation in off-farm incomes observed among households. In all three age groups, the association between farm size and income source is

confirmed. However, we can also observe that the association tends to weaken among the older households. In fact, regardless of land size, young households and individuals rely more often on off-farm incomes than do older ones. For example, when the head is below 40 years of age more than half of the households (53 %) have their main income source outside farming, whereas for households with heads between 41 and 60 years and above 60 years the corresponding figures are 28 and 17 per cent, respectively (Table 11.4).

Table 11.4: *Main income source and farm size for different age group.*

Households with heads up to 40 years of age:

Main income source	Farm size		Total
	- 0.5 acres	0.6 – acres	
Off-farm	88.5	44.9	52.9
Farm	11.5	55.1	47.1
Total	100.0	100.0	100.0

Valid cases 291. Cramer's V 0.33; significance test 0.000

Households with heads between 41 and 60 years of age:

Main income source	Farm size		Total
	- 0.5 acres	0.6 – acres	
Off-farm	77.5	24.4	27.5
Farm	22.5	75.6	72.5
Total	100.0	100.0	100.0

Valid cases 269. Cramer's V 0.29; significance test 0.000

Households with heads 61 years of age and above:

Main income source	Farm size		Total
	- 0.5 acres	0.6 – acres	
Off-farm	50.4	13.5	16.6
Farm	49.6	86.5	83.4
Total	100.0	100.0	100.0

Valid cases 159. Cramer's V 0.19 (significance test with Cramer's V 0.02)

At the same time, a small farm size tends to aggravate these generational differences. In the youngest group, for example, nine out of ten households

rely on off-farm income when the land is smaller than 0.5 acres. For households in which the head is between 41 and 60 years and above 60 years the proportions are 77 and 50 per cent, respectively. In the age group above 60 years, there is a relatively large number of retired household heads with small farms due to land subdivision. Due to old age, individuals in this group do not seek off-farm incomes to the extent that young ones do. Their consumption demands are smaller and to a great extent, they rely on remittances from children. Consequently, the observation we made initially in Table 11.1 that a quarter of the 'landless' households derives most of their income from farming is to a great extent an effect of old households being present in the sample. When controlling for age, the dependence on off-farm incomes for 'landless' households stands out more clearly.

A life cycle kind of phenomenon?

To what extent is the pattern described a life cycle related phenomenon and to what extent does it represent a more fundamental kind of change? The partially migratory behaviour of young men seeking out business and employment opportunities in order to accumulate wealth for marriage is nothing new. This has been a common pattern since early colonial rule, before which time young men participated in cattle raiding for the same purpose. What we now observe, however, is a more fundamental reorientation of livelihoods that attracts large numbers of youth but which also affects households of middle age. It is hardly surprising that young people nowadays seek off-farm incomes to a much greater extent than before in view of the changes that African rural areas are undergoing. As noted by Bryceson (1997a), young men often face fragmented land holdings, are better educated than their parents, are more exposed to alternative life-styles and often resent the low-income results and drudgery of doing farmwork on small holdings. The great upsurge in off-farm activities pursued by Tanzanian youth has been documented by, among others, Madulu (1998), and Mwamfupe (1998).

Added to this picture are the changes incurred by structural adjustment and economic liberalisation, as discussed earlier. The rapid growth of local markets and the lodge building activities pursued by farmers on land near

the townships underline the argument that what we observe today cannot be interpreted as a life cycle phenomenon alone, but indicates a deeper transformation of livelihoods in some rural areas in Africa.

Young households and the 'revolution' of material aspirations

The higher propensity of young households to be involved in off-farm work consequently suggests an impact from factors that reflect changes underway in the younger generation. This, in turn, demands several explanations, some of which we hinted at above. One is the smaller average size of their holdings, which is due to a land fragmentation that for every generational shift has reduced per capita availability of land, as we have seen. However, young households seek off-farm incomes to a larger extent than others irrespective of land size. The most plausible explanation here is the life style and welfare aspirations of young people. Among male youth, there is a widespread perception of agriculture being unable to generate sufficient incomes to support what they consider to be a reasonable standard of living.

The life style factor stands out very clearly in the interviews we made with young household members and male youths not yet married. Just as the young Christian coffee-farmers before them once opposed the cattle economy and the polygamous orientation of their parents, many youth today oppose the social values held by the older generation and the limited prospects for wellbeing that the agriculture and coffee-based livelihood can offer. They resent the idea of having large families like those of their parents, seeing that this is incompatible with the economic progress they aspire, and they see little attraction in the physically hard work for low pay that have characterised much of their parents' toil. Many of them also wish to develop more equal relations with their spouses than those they have experienced from their parental homes.

Above all, young household members wish to elevate themselves from the 'poverty' condition of their parents. In order to achieve this, they view their small fragmented farms as grossly insufficient. The youth we interviewed were consistent in their opinion that in order to increase their standard of living, the bulk of incomes must come from outside agriculture. One 'milk

boy' we interviewed in Singisi, collecting and reselling milk in Arusha and Usa River, made a net profit of about 3,500 TSh (about 7 US \$) per half day of work. The rest of the day he was working on his own small farm or did other business. To match this income he considered he would need some 20 acres on the plains plus capital to work it efficiently.

We have seen from the research co-ordinated by Bryceson that the quest for off-farm incomes shown by young cohorts is a phenomenon seen in all of Tanzania and even in all of Africa (Bryceson, 1997a; 1997b; 1999). Yet, we are inclined to argue that the catalysing factors leading up to the emerging aspirations for improved material conditions are stronger and more prominent in Arusha area than in most other places in Tanzania with the possible exception for Dar es Salaam. What is occurring in Meru is nothing less than a 'revolution' of material aspirations, a rise in life expectations that stands in sharp contrast to the pessimistic outlook that was typical of the economic recession only a decade ago. The good infrastructure, the long history of material progress and education, the proximity to Arusha town and the constant exposure by Meru household members to townlife with its shops and tourists, are among the factors facilitating the flow and planting of new ideas and life styles among young people, especially.

Better in Arusha area than elsewhere are also the prospects for realising some of the aspirations held by young and to some extent middle-aged household members. Consumer goods of various kinds flow into the area and are sold in local shops. And the dynamic interaction between Arusha and the hinterland includes a multitude of small business and employment opportunities to which rural dwellers are responding. As a result, there is a marked upsurge in building activities and house improvement in Meru, as well as changes in food, drinking and clothing habits. 'Luxury' items such as house furniture, radio receivers, building material and good clothing are much in demand.

Associated with these changes is the gradual monetisation of the local economy where virtually every piecework or labour exchange now demands payment in cash. This represents a substantial change from the situation only one or two decades ago when casual labour, work parties and work exchange between neighbours involved exchanges and rewards in the form of food and drink. In order to meet welfare aspirations, and even meet daily

food requirements, the demand for cash has increased among people that formerly were satisfied with payment in kind.

It is a common complaint among many people that nowadays life has become very expensive and that money is needed for everything. This is definitely true, since with the cost sharing of public health and education services that formerly were free, households expenses have no doubt increased. However, we also found that part of this view had to do with changing consumer values and aspirations. For young households today, consumption demands in terms of food, clothing, transport, housing material etc. is different from that of their parents. Indeed, to a great extent the opinions on the cost of living expenses reflect attitudinal and habitual changes that have occurred among these same households within the last ten or so years. For many, but not for all, this same period also represents real progress in terms of income earning and living standards.

Coming back to the land issue, the poor response by young people to the repeated requests by the President and others to take up land in the sparsely populated areas of the country is typical. Similarly, very few youths responded to the official resettlement schemes launched in the 1980s and which involved the granting of land to Meru farmers in Kiteto district to the south of the mountain. Few youths are attracted by the idea of pioneering into the distant plains given the scarcity of water and the poor transport and social facilities characterising this frontier area, and the labour requirements and uncertainties involved in farming in such drought prone surroundings. All things considered, most youth believe their life chances and incomes are greater on the mountain than in a distant rural place in spite of the fact that land there is abundant.

This should not be taken to mean that youths are indifferent to the land issue. Part of the poor response by youths to resettlement off the mountain is due to their lack of capital and transport, a circumstance that limits land expansion to already resourceful farmers. However, although many youths would be interested in obtaining land for cultivation off the mountain they are not very keen on settling on the plains. They are not prepared to give up their mountain plots and homesteads and the proximity to markets and social services that a mountain residence involves.

As a result, for every year congestion becomes worse on the mountain and the quest for land takes on more desperate forms, as for example in 1995

when hundreds of youths invaded and squatted on the nearby 'abandoned' Arusha Coffee Estate. Land conflicts are a constant preoccupation of clan elders negotiating the opposing demands of brothers and of fathers and sons. Meru youths are extremely aware of and concerned about their shrinking heritage. While, on the one hand, they clearly resent and oppose the livelihoods and values of their parents, on the other hand they strongly advocate the tradition of every male's right to land. To be landless is an unthinkable fate that makes them social outcasts and deprived of their social identity, belonging and recognition. While in reality, the inherited land often is nothing more than a garden outside the homestead, it has enormous emotional and symbolic value. The idea of land as an ultimate subsistence fall back option, whether real or imaginary, and as a means of social identity is deeply rooted in the minds of the Meru, the young ones being no exception.

To conclude, young age and a small land size appear to constitute a strong combination for the occurrence of off-farm rather than farm based types of livelihood. In light of what was said earlier, we may add that education above Primary level has the same effect when the farm exceeds the rather modest size of half an acre. The increase in off-farm pursuits that has taken place in the last decade or so are due to the combined effects of material constraints, the emergence of alternative economic opportunities and a 'revolution' of aspirations among the younger strata of the population. While the emerging consumerism entailed in these changes contains social values and life styles different from those of the older generation, also young Meru will struggle fiercely for their customary right to land and residence on the mountain.

Circular migration and commutation

Nearly two thirds of the economically active household heads involved in off-farm activities perform these in locations outside their own village, the majority of them in Arusha town, in Tengeru area and Usa River. These are places within commuting distance from mountain homesteads and where local entrepreneurs have their networks of market contacts, business partners and patrons. Relatively few heads work in distant places requiring their

temporary absence from home for days or weeks at a time. Such absentee household heads amount to only 5 per cent of the total. When one looks at household members in general, however, temporary absence is more common, especially among the young ones. About 11 per cent of all household members between 15 and 30 years of age were temporarily absent at the time for the survey.

Most of the absent household members do business or casual labour away from their homes, sometimes for prolonged periods of time. The expanding gemstone mines at Semanjiro/Mererani south of Mbuguni attract increasing numbers of young males and school leavers. Small mining enterprises and their side activities stand for a great deal of young people's income opportunities in Meru. Apart from Mbuguni, the most frequent places to which young people head during their temporary absence include Arusha, Namanga (Kenyan border post), Dar es Salaam and Tengeru, all of which are important trading locations. Two thirds of the absentees below 30 years of age are males. Some young people are absent due to education, but for the majority absence is caused by their quest for cash income. Young males travel widely in the region, networking and buying and reselling things in different places. They spend quite a lot of their earnings on fashionable consumer goods, clothing and beer. Some of them, however, are able to send some money home or to save some for their return to the village.

Prolonged absence (> 12 months) was in the survey defined as permanent outmigration. In Table 5.3, we saw that about one quarter of Meru sons and daughters had left their parental homes in order to settle outside Arumeru District. Many of the unmarried men will return to the mountain in order to marry, settling down to cultivate the land they expect to inherit at that same occasion. A few will retain their distant income source and be away from their homes as absentees, leaving the wife and hired labourers to do the cultivation on the farm. The majority, however, will look for alternative income sources nearer the mountain. Remittances from absent members constitute an important income source. This is particularly the case for elderly households with limited ability to earn their own income. About half the number of the migrants we recorded sent cash remittances to their parents (Table 5.3).

The survey data and interviews we conducted with household members point in the direction that prolonged absence from home often serves as a

means of accumulating income in order to marry or build a house, to raise capital for business etc. Of the household heads in the sample, about 40 per cent had at any one time been absent from home for a period exceeding six months, with a mean accumulated length of absence amounting to about 5.5 years. Men dominate among these absentees.

For half of the male heads (49 per cent) having this experience, migrant labour occurred before marriage and before they had inherited a piece of their fathers' land. It should be safe to say that migration/temporary absence has been, and still is, a predominately male activity, which often takes place during young age and serves as a means of wealth accumulation and as a source of income for (elderly) households on the mountain. For young men, prolonged absence from home is a form of social initiation ritual. It proves they are independent, capable of earning their own income and ready to marry.

The sex ratio (male/female x 100) calculated from survey data for the age groups 15 to 30 years is 84, indicating a surplus of girls of marriageable age on the mountain. The overall adult sex ratio is slightly less skewed (89), suggesting that although most income sources are found within commuting distance, circular migration and prolonged absence from home remain important income earning strategies by individuals and households on the mountain.

The gender dimension

Controlling for sex does not alter the general age-related pattern described earlier. In fact, for female headed households, small land size appears to be an even more decisive factor for reliance on off-farm incomes than it is for male households. Given that the ability of female household heads to put land into productive use often is circumscribed by male relatives and a male dominated society, this is hardly a surprising finding.

There is, however, a clear gender dimension in both the extent and kind of off-farm activities that men and women as household heads involve in. Although women increasingly have become involved in off-farm work after independence, and especially in the last decade or so, it should be empha-

sised that off-farm work, and in particular circular migration/prolonged absence from home, are predominately male activities.

A similar pattern emerges regarding off-farm work in general. Nearly two thirds (60 %) of the male heads but less than a fifth of the female heads (18 %) had in 1996 an income source outside their farm (remittances disregarded). While for the women concerned this was often their first experience of earning incomes from outside the farm, prompted by their social condition as widows, divorcees or being single, for men it was only the latest in a series of employment and small business experiences, which they had gone in and out of for many years.

Another difference between male and female household heads is that female off-farm work is more localised than that of men. It involves predominately small business activities, such as selling small quantities of crops or handicrafts at nearby markets, and occasionally in Arusha. There are women who are specialised traders over longer distances or who run beer-brewing stations in the townships, but these are exceptions. Men, on the other hand, may travel to distant places and are often employed or involved in business activities that require a wide network of contacts and markets. More than a third (37 %) of the male household heads consider an off-farm activity to be their main occupation (i.e. taking up most of their working time). The corresponding figure for female heads is 11 per cent, which both reflects on their higher mean age, their lower educational level and their socialisation into a predominately domestic role.

Then, what about household members in general? If we concentrate our analysis on data for the 1,902 sampled household members of between 15 and 65 years of age (youths still in school excluded), whom we have defined as economically active, we find that also in this case there are gender differences. We see that nearly two thirds of the men (63 %) but less than a third (28 %) of the women were involved in off-farm work of some kind in 1996.

Both adult men and male youth are more consequently and for longer periods at a time involved in off-farm work than are young women, daughters and wives. For young men, off-farm work is more often than for young women a factor contributing to their independence and outward orientation, as well as being a means of wealth accumulation and a preparation for marriage. After marriage and when they have acquired some land, men continue to draw on off-farm incomes, albeit with less absence than before mar-

riage. Daughters' income contributions to the household are a welcome complement. More often than is the case for sons, daughters share or pool their income for the benefit of their parental household as a whole. Daughters and wives, however, are constrained in their movements and freedom to work off-farm by social norms invoked on them by parents, elder brothers and husbands and by their responsibility to care for children and the food needs of their families. They are on the whole being socialised into roles as mothers, wives and workers on the family farm (see also, Haram (1999, 156ff, 181ff)).

It should be noted, though, that the current trend seems to be that women and wives today participate more often in off-farm work than before, prompted to do so by the hardships (and opportunities) invoked on households in the liberalisation period, a finding that has been recorded by others elsewhere in Tanzania (see for example Jambiya, 1998). It surfaced in interviews with young men that they seem to value good employment, education or trading talents of their wives as important assets in marriage. Gender differences in relation to off-farm work are less conspicuous now compared to what the situation was like one or two generations ago. One reason for this change is that the educational difference between boys and girls is less pronounced now than before. Another reason is the land shortage and the income aspirations of young households in particular, which has made it socially more accepted that women earn income from employment or business. These attitudinal changes, however, do not always tally with what actually takes place on the ground and should not be taken to mean that young wives enjoy a freedom of movement equal to that of men. As recently demonstrated by Haram (1999) in the case of the Meru, marriage generally invokes restraints on women's freedom to move and earn an independent income.

Kinds of off-farm activities

Categorising the main cash income sources of households in Meru, we end up with the distribution given in Table 11.5. By focussing on household heads 65 years or younger, we are able to eliminate households that rely mainly on remittances from grown-up children and concentrate on those

households which by their own means provide for their livelihoods. In the latter group, we see that for 38 per cent of the households, off-farm sources account for most of their cash income. Most commonly, off-farm incomes derive from various kinds of businesses and self-employment activities, most of which is of small scale and organised on a family or individual basis.

About equal numbers of households rely on incomes from permanent employment as on temporary or casual labour kind of employment. There seems to be a preference for business sources of income before other sources. We should, however, note the difficulties involved in this kind of categorisation. Most households (and individuals) rely on a multitude of income sources, which are flexible and may change according to season, cash needs and work opportunities. In the following tables, the figures presented refer to what individuals report as their most typical or frequent off-farm activity or occupation in the year preceding the survey.

Table 11.5: *Main cash income source of Meru households. Columns in per cent of respondents*

Main cash income source	All households	'Economic. active' households
Sale of farm products	64.6	62.0
Permanent employment	8.8	11.2
Business/self employment	14.0	15.9
Temp. employment /casual labour	8.9	10.7
Remittances	3.6	0.2
Missing	0.2	0.0
Total	100.0	100.0

Total cases 753 and 598.

In Table 11.6 data is given for 'active' household *heads*' 'main occupation' and what kind of off-farm work they have been mostly involved in, regardless of this being their main occupation or not. Table 11.7 gives the distribution for *all* household members 15-65 years of age. In both tables the distribution according to sex is also given.

In Table 11.6 we can see that male heads on the whole are more involved in off-farm activities than female heads. For example, about one fifth of the male heads are permanently employed, while this is the case for only three per cent of the female ones. Looking at 'main occupation', nearly a third of all 'active' heads are involved in either formal employment (17.6 %) or self-

employment/business (15.5 %) on a more or less permanent basis (being their main occupation). Casual labour as a 'main occupation' is reported by only 10 per cent of the household heads. Moving over to the table columns for income activities, on the other hand, we can see that the number of heads being involved in business and casual labour is greater than the number of households having these activities as their main occupation. To a large extent, business and casual labour are part time activities, which household heads may go in and out of depending on demand and opportunity and seasonal workload in agriculture.

Table 11.6: *Main occupation and kind of off-farm income activity of Meru household heads (male and female) 16-65 years of age.*

<i>Main occupation</i>	'Econ. active' heads	Males	Females	<i>Off-farm income activity</i>	'Econ. active' heads	Males	Females
Farming/housework	56.6	51.6	84.4	No off-farm activity	39.7	33.6	73.7
Employment	17.6	20.3	3.0	Employment	17.0	19.5	3.0
Business/self-empl.	15.5	17.0	7.0	Business/self-empl.	26.5	28.4	15.5
Casual labour	10.1	10.9	5.5	Casual labour	16.8	18.4	7.7
Missing	0.2	0.2	0.0	Missing	0.0	0.0	0.0
Total	100	100	100	Total	100.0	100.0	100.0

Total cases 598, missing 1.

Table 11.7 reveals the pattern for *all* household members, 15-65 years of age. Also in this case are business and casual labour activities that people may revert to in a part time and flexible fashion. What is noteworthy in both Table 11.6 and Table 11.7 is the relative position of the three types of income sources. The fact that more household members are involved in business and casual labour as opposed to formal employment is probably foremost due to scarcity of reasonably paid permanent jobs.

Also noteworthy is the more frequent occurrence of business activities compared to casual labour. This is the case for both household heads and household members in general. Most often, casual labour refers to low paid, irregular, uncertain, manual and unskilled types of jobs in both agriculture and other sectors. Land preparation, weeding, fetching cow fodder, digging pit latrines, loading and unloading goods etc. are examples of work that belong to this category. Most of these jobs have a low social status and are taken on by individuals as a last resort when no other options are available. A

large number of low paid jobs within the farming sector in Meru are filled by immigrants while the Meru themselves to the extent possible avoid taking on such jobs.

Business activities, on the other hand, render the person involved a degree of control over his/her labour and incomes. Although some business activities generate very small incomes indeed, these are preferred by the respondents to casual labour on the basis that business incomes represent the fruits of one's own labour. The overall view is that with skill, dedication and luck, business incomes can provide a good living standard. Most of the business activities mentioned by respondents are small family based kinds of petty business, such as trading small amounts of crops and milk or small quantities of various kinds of consumer goods. Small businessmen and women travel to markets in the district for their trading activities. Others own small shops or bars in the villages or in Tengeru, and a few have set up village workshops for carpentry, masonry, tailoring etc. Some do business on an entirely individual basis. Others participate in some kind of network, working jointly and pooling resources with age mates or friends. Or they may work on commission for others, be linked to urban partners or depend on patrons and market contacts for their activities.

Table 11.7: Main occupation and kind of off-farm income source of *all* Meru household members 15 - 65 years of age.

Main occupation	All	Males	Females	Income activity	All	Males	Females
Farming/housework	58.3	44.9	71.1	No off-farm activity	60.9	45.4	75.7
Employment	9.1	13.7	4.8	Employment	8.1	12.3	4.1
Business/self-empl.	10.9	16.8	5.3	Business/self-empl.	18.1	24.9	11.6
Casual labour	8.7	12.2	5.3	Casual labour	12.9	17.5	8.6
In school	12.5	11.8	13.1	-	-	-	-
Other	0.6	0.7	0.5	Missing	0.0	0.0	0.0
Total	100.0	100.0	100.0	Total	100.0	100.0	100.0

Total cases 2,177, missing 7.

Petty business is a summary term for activities, the organisation of which bears a strong resemblance with what Lipton calls the Family Mode of Production (FMP) and what Seppälä (1998) described as 'flexible specialisation' (see Chapters Two and Seven). Capital investment is small, entry into

the market is easy, returns may fluctuate, the family provides most of the labour and capital required, and the activity can easily be moderated and adapted to other ongoing activities (i.e. agriculture) and to the shifting labour supply and consumption needs in the household, as well as to the requirements and opportunities of the market.

Credit for business capital is in most cases raised from within the family or from close friends or relatives, a circumstance that gives further evidence to the tight social and informal character of business activities and to the flexibility of the entrepreneurs in terms of labour input. It also emphasises the importance of social networks, most of which are constituted by close kin and relatives. Despite the crucial role of networks for providing credit, raising capital for business is by most of the youth interviewed perceived as a serious constraint. Save for a few NGOs operating in some villages, there is virtually no other channel than informal networking and patronage by which entrepreneurs can gain access to credit.¹³⁵

Formal employment is an often sought after position but is difficult to achieve, at least as far as good payment is concerned. The most common types of permanent jobs are found within the formal government administration or the public sector; i.e. nurses, teachers, civil servants, clerks etc. Only a few persons have managed to obtain a highly salaried and top ranking job in the administration or for a parastatal or private company. Some have become employed within the tourist industry or in other types of service oriented sectors. Very few are employed within the formal manufacturing sector.

As with employment, business activities span a vast range of incomes, from the family type of petty business described to activities requiring a substantial capital investment. A few households run transport businesses in the form of buses and lorries. Others are involved in the construction sector, tourist industry or do wholesale trade of various consumer goods or crops.

135 FAIDA (Finance and Advice in Development Assistance to Small Enterprise Promotion) is one of the NGOs providing credit in the form of soft loans to young entrepreneurs. PRIDE (Promotion of Rural Initiatives in Development) and SEDA (Small Enterprise Development Agency) are other examples of NGOs working in this direction. In spite of their presence, obtaining credit for micro-business is difficult and networks of friends and relatives, and to some extent patrons, remain the main channels through which entrepreneurs raise capital for business or are invited to participate in such activities.

A lucrative activity, towards which large numbers of youth have become attracted in recent years, is trade in gemstones. A few examples of fortune building in this sector have lured hundreds of youths into trying their luck in the mining industry at Semanjiro/Mererani. Most of them begin as gemstone diggers at young age in one of the most dangerous kinds of jobs available in the district in the hope of getting rich at a strike. For the majority, the risks are high and the efforts they make are futile. Only a few are able to elevate themselves from their low status and poverty condition (see also Haram, 1999, 213).

The broad characterisation of off-farm activities presented reflects a range of quite contrasting livelihoods. These include survival strategies in a situation where access to land is insufficient, as well as accumulation strategies through activities that are complementary to agriculture. Below, we will look at how household and individual characteristics relate to off-farm income activities, a path we will explore further in Part III.

Linking the type of off-farm income to farm size, age, sex and educational level.

So far, we have concluded that small farm size, low age, higher education and male sex increase the propensity of respondents for seeking off-farm incomes as such. But do these factors matter also for the *type* of income activities that respondents look for and rely on for their livelihoods? In Table 11.8, an elaboration of Table 11.6, we can see that small farm size increases the propensity for household heads to rely on business and casual labour, while for heads with larger farms, employment is a relatively more important off-farm option. Regardless of farm size, however, business is the most frequent off-farm activity.

Table 11.8: *Main type of off-farm activity and farm size for household heads below 65 years of age*

Main off-farm activity	Farm size:		Total
	- 0.5 acres	0.6 – acres	
Employment	11.0	31.7	28.2
Business	53.5	41.9	43.8
Casual labour	35.5	26.4	27.9
Total	100.0	100.0	100.0

*Total cases 598, valid 357; Chi² 0.02.

The association between age and type of off-farm income is given in Table 11.9. We have divided the respondents into two age groups: 'young' (- 40 years) and 'old' (41-65 years). The main difference between the age groups lies in the more frequent occurrence of business incomes among young household heads. More than half of the heads in this group rely on business as their main off-farm activity. In contrast, for household heads above 40 years of age, employment is the most common off-farm activity. In this group, there is also a slightly higher propensity of earning income from casual labour.

Table 11.9: *Main type of off-farm activity and age group for households heads below 65 years of age. Columns in per cent of respondents.**

Main off-farm activity	Age group:		Total
	- 40 years	41-65 years	
Employment	22.7	36.8	28.2
Business	52.0	31.3	43.9
Casual labour	25.3	31.9	27.9
Total	100.0	100.0	100.0

*Total cases 598, valid 357; Chi² 0.01.

Looking at the association farm size – type of off-farm activity in the light of respondents' age, it is evident that farm size only matters for the elder group of respondents (for the young group the association is statistically non-significant (Chi² 0.34)). Although small farm size increases the propensity of earning off-farm incomes in general also for younger household heads, as we saw in Table 11.4, it does not lead to one type of off-farm work occurring more frequently than another. As it seems, young household heads tend to look for business opportunities regardless of farm size. For the older group, however, displayed in Table 11.10, a small farm size is clearly associated with low status and low paid off-farm work in the form of casual labour, while a larger farm size implies a higher incidence of employment income and business to some extent.

Table 11.10: *Type of off-farm activity and farm size for households heads 41- 65 years of age. Columns in per cent of respondents.**

Households with heads 41-65 years of age:			
Main off-farm activity	Farm size		Total
	- 0.5 acres	0.6 – acres	
Employment	1.8	41.0	36.9
Business	18.8	32.6	31.2
Casual labour	79.4	26.3	31.9
<i>Total</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>

*Total cases 598, valid 129; Chi² 0.002.

Both business and employment activities hold a potential for higher incomes than casual labour. Table 11.10 suggests the possibility of a mutually reinforcing relationship between on-farm and certain off-farm activities that is realised above a certain farm size, and one which also may reflect income and wealth inequalities within the older group of respondents.

What factors, then, account for the variation in the type of income sources observed in the younger age group? Educational level may here be worth investigating. In Table 11.11, we can see that higher educational level increases the probability for employment incomes among both young and old respondents, while lower education is associated with an increase in (petty) business activities and casual labour.

Table 11.11: *Type of off-farm activity and educational level of households with heads below and above 40 years of age.**

Households with heads up to 40 years of age:			
Main off-farm activity	Educational level		Total
	Primary	Secondary +	
Employment	10.1	51.0	22.7
Business	57.0	40.7	52.0
Casual labour	32.9	8.3	25.3
<i>Total</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>

*Total cases 598, valid 227; Cramer's V 0.47, Chi² 0.000.

Households with heads 41-65 years of age:

Main off-farm activity	Educational level		Total
	Primary	Secondary +	
Employment	21.1	71.8	36.9
Business	38.9	14.5	31.2
Casual labour	40.1	13.7	31.9
Total	100.0	100.0	100.0

*Total cases 598, valid 130; Cramer's V 0.49, Chi² 0.000.

The correlations in Table 11.11 are stronger than the ones found between farm size and income source. For the young group, secondary education increases the likelihood for employment income and reduces it for casual labour. For the older group, low education reinforces the effect of a small farm size by limiting off-farm options to unskilled and temporary work and/or petty business kinds of activities. A larger farm size combined with secondary education, however, increases the likelihood for employment incomes (and more profitable business activities).

To summarise the presentation in this section, we may conclude that the factor accounting for most of the variation in the *type* of off-farm incomes is educational level. A higher educational level increases the likelihood that a household head derives his/her off-farm incomes from employment, while lower education makes it more likely that off-farm work takes the form of casual labour or petty business activities. This association holds regardless of the age, sex and farm size of the respondents. We may, however, make the following qualifications. Farm size matters for the type of off-farm activities pursued but only for older respondents, while for young household heads farm size is of little or no significance for the type of off-farm activities chosen.

Respondents' sex matters, since female heads on average have lower education and a smaller farm size than male heads, a circumstance that makes women more likely than men to engage in petty business activities. When controlling for education and farm size, men and women hold employment positions to the same extent, but since in absolute numbers more men than women have higher education and a larger farm size, more men than women are also employed.

Also age matters, since young households are more prone to look for business solutions to low education than older ones are. Young household heads seem to be driven by aspirations of making money, and the relative ease by which petty business can be launched and the status involved in doing business has great attraction to them. Age also matters for the propensity of obtaining formal employment, which increases with age up to a certain point, after which it declines due to natural reasons (retirement of the respondents).

From here, we will move over to discuss the links between agriculture and off-farm activities.

Farm performance under diversification

Introduction

In Chapter Seven, we noted that diversification has been commonly recognised as a way of increasing rural incomes and agricultural output through positive inter-sector linkages. Past development in Meru largely confirms this view. In the previous chapters we have demonstrated that off-farm work from early on was an important element in the adoption and diffusion of new agricultural technologies. Those being in the forefront of adopting coffee in the pre-independence period, for example, were people who had come into close contact with European settlers and missionaries as workers and Christian converts. In this process, the dissemination and adoption of innovative ideas and life aspirations were probably as important for agricultural performance as the financing of new farming methods and inputs by incomes from outside the farm. Education had a similar effect. Household heads with above average education were also more inclined towards innovation and performed better in terms of agricultural output.

There is, however, also the opposing view that under certain conditions farmers may cease to reinvest off-farm earnings on their farms. A severe scarcity of land, for example, may deter farmers from investing capital and labour in agriculture and make them opt for off-farm work where the pay-off is higher. Bryceson implicitly hints at the possibility of such a scenario with farmers crumbling under the forces of population growth, land scarcity and environmental degradation (Bryceson, 1997b, 237-9).

Also Netting, who was the perhaps strongest defender of the position that smallholders always care for their land, recognised this possibility (Netting,

1993, 150). For extremely small farms, the marginal returns to labour and capital may be just too small. Land is not enough for the human hands, farm equipment and the animal traction to be fully employed (Netting, 1993,150). In this situation, opportunities for earning income from outside the farm may prevent the owners of such small plots to experience a situation of distress and pauperisation.

However, since household members direct their efforts to off-farm work, the result may be a shortage of labour for farmwork. This, in turn, may propel a change into more labour saving crops and extensive farming methods. Under some conditions the result may be land degradation in the form of depletion of nutrients or, in the more serious case, of soil loss due to erosion. In a recent study on Mount Meru, Assmo (1999, 202-3) argued along these lines when claiming that households' off-farm work constitutes a drain of the labour resources available for farm work. By working off-farm (some) households reduce their attention to their land, a situation that leads to land degradation.

It can be argued that instead of using own capital when land is small, a farmer unable to support a dairy cow or farm equipment, for example, may rent or borrow such inputs. Such arrangements can also be seen taking place in Meru. Similarly, a farmer who lacks resources on his farm may bring these in from outside. The most obvious example here is the daily provision of fodder grass collected on the plains for dairy cows on the mountain. Just how small a farm can be before becoming too small is a matter for empirical investigation in every specific context. It also depends, among other things, on the general macro-economic and policy conditions for marketed production and of the opportunities and incomes that can be earned from off-farm work (Netting 1993,150).

In this chapter we will discuss these issues and try to empirically substantiate them and the conditions under which they may be valid. Our investigative inroad departs from the effects on farm performance of the off-farm occupation of the household head.

Farm performance, off-farm incomes and household determinants

As a dependent variable for farm performance we constructed a farm productivity index consisting of three components; i) reported coffee yield (kg per acre) in 1994, ii) reported milk yield (ltr per cow) in the year before the survey, and iii) perceived long term changes in maize yields per acre (whether production has increased or decreased) on the plains and on the mountain.¹³⁶ While the first two variables reflect the situation in the mid 1990s, the maize performance variable reflects a time span from a few years to several decades depending on the age of the respondent. This mix of cross sectional and longitudinal criteria in the composition of the index is to some extent determined by the nature of survey data.¹³⁷

From the one hand, it may seem inconsistent to mix longitudinal and cross-sectional data on farm performance with data on the present income activities since production conditions and the life situation of household members are bound to change over time. On the other hand, although the performance on coffee and milk yields recorded for one year is a poor indicator of absolute production levels over a longer period, we feel quite comfortable that in a *relative* sense the measured differences in production levels between households reflect conditions that at least in a mid-term perspective can be assumed to be quite stable and which are likely to influence farm performance.

136 The values of the three variables in the index were standardised according to the formula $(X-m)/s$, X being the household score on the variable, m being the mean score, and s being the standard deviation. Thereafter, a mean standardised score based on the three variables was calculated for each household. The mean scores show the relative positions of the households on the productivity index. Negative values stand for below mean performance and positive values stand for above mean performance.

137 As we discussed in the Methodology chapter, interviewer bias was detected on variables dealing with farmers' perceptions of long-term changes in yields and soil capacity. It should be noted that estimated correlations involving these variables are consistently higher for the more experienced and skilled of the two enumerators used in the survey, i.e. the association between off-farm incomes and farm performance may in reality be stronger than what is indicated in Table 12.1. In the analysis we have incorporated both enumerators but throughout cross-checked the results for bias. Where the direction or significance of association is in doubt we have analysed the data for each of the enumerators separately.

One such condition is the occupational orientation of the household head. Although, the balance between farm and off-farm activities in a household as a rule may fluctuate over time, we assume that the occupational orientation of the household head indicates a more lasting situation than that of a particular economic activity recorded at the time for the survey. Occupational status should be interpreted to mean the activity on which the household head spent most of his/her labour time in the year preceding the survey. We argue that the occupational orientation of the household head can be seen as a resource against which measurements of long term changes in yields or soil fertility make sense. It is on this basis that we have set out to hypothesise that off-farm pursuits by household members, and by the household head in particular, explain some of the variation in farm performance that we can observe between households.

For the crosstabulations presented below, we have dichotomised the productivity index into 'below/above average productivity'. We have also omitted households that are landless, reducing the total sample size from 753 to 737. We are using the occupational status of the household head (farm or off-farm) as the independent variable. The result is given in Table 12.1.

Table 12.1: *Occupational status/income source of household head and farm performance of the household. Distribution in per cent.**

Farm performance	Occupational status		Total
	Farm	Off-farm	
Below average	62.5	48.5	57.6
Above average	37.5	51.5	42.4
Total	100.0 (470)	100.0 (212)	100.0 (682)

* Total cases 737, missing 55. $\text{Chi}^2 < 0.001$.

A statistically significant correlation is revealed in the Table between the occupational status/income source of the household head and farm performance. The correlation indicates that off-farm occupation and off-farm incomes may have a positive effect on agricultural output. Before confirming our hypothesis, we will look into some of the conditions on which it may be dependent. For example, is there a difference between male and female household heads in the way off-farm incomes influence farm performance?

When controlling for the sex of the household head, the association between off-farm incomes and higher farm performance is valid for men but disappears for women. The result is not conclusive, however, since the dataset of the more experienced enumerator indicates a valid association also for women. However, the very small number of sampled women with both off-farm occupations *and* access to land presents a problem of interpretation and statistical significance. A larger sample of women with off-farm incomes would have been needed. A cautious conclusion is, however, that when having access to land women do put off-farm incomes into productive use on their farms. This may seem surprising in view of the circumscribed conditions of production for women generally. Policy measures that increase access to land for women and improve their income earning possibilities are therefore likely to have a positive bearing on overall agricultural performance, since such measures would enable the women to purchase modern inputs and hire labour for farming.

Also, when controlling for age, the positive and significant association between off-farm occupation and higher agricultural productivity is replicated for both young and old households. However, as a rule, households with heads below 40 years of age do not only participate more frequently in off-farm activities, as we demonstrated in the previous chapter, they also show a somewhat higher incidence of above average farm productivity (46 %) than do older households (41 %). It is therefore hardly surprising that the association is stronger in the younger group than in the older one, young households being somewhat more inclined to reinvest some of their off-farm incomes in order to raise production on their farms.¹³⁸

Controlling for educational level of the household heads, we observe that the positive association between off-farm work and farm performance is statistically significant only for the group of households with primary education. As a rule, the better-educated households perform better on the productivity index than do the lower educated ones regardless of income source. For the former group, other factors than off-farm incomes explain their generally better farm performance. Here, we must ponder the possible impact of age-related factors and gender, knowing that higher education is associated both with younger age and male sex.

138 Using Cramer's V measure of association, the younger group scored 0.2 and the older one 0.1.

Off-farm work, farm size and productivity

Our final possible determinant of farm productivity investigated is farm size. We find that off-farm occupation is associated with improved farm performance for both small and large landowners. Below a farm size of 2 acres, the association is strong. Above 2 acres, it first disappears and then reappears for households with holdings exceeding 7 acres. We summarise this finding in Table 12.2. The picture revealed is not entirely clear, albeit interesting. It is quite possible that for households with land of a size below 0.5 acres, off-farm work by the head constitutes an essential income source for increasing land productivity, the causal direction going from off-farm work to farm performance (via the purchase of farm inputs), hence invalidating the argument that a fragmented farm size deters investment. The same causality may be the case also for large-scale farmers. However, informal interviews with farmers in this group also raise the possibility that the strong association may reflect a causal mechanism in the opposite direction, namely that farm incomes are reinvested in non-farm sectors.

Income diversification is a common characteristic among large-scale farmers, for whom a surplus income from commercial farming frequently is reinvested in non-farm sectors such as transport, construction and trade of consumer goods. This is a strategy that adds to the wealth accumulation of this group. In addition, it provides an income fall-back option should the harvest fail due to drought or other reasons. For 'middle' farmers, finally, in the Table represented by a farm size from 2.1 to 7.0 acres, the variation in farm performance remains largely unexplained by the occupational orientation of the household head.

Table 12.2: *Measure (strength) of association and significance test for the association between occupation and farm performance by farm size.**

Association/ measure and test	Total land cultivated (farm size)				
	- 0.5 acres	0.6 – 2.0 acres	2.1 – 4.0 acres	4.1 – 7.0 acres	7.1 - acres
Cramer's V	0.43	0.16	-0.01	0.17	0.29
Chi ² test	<0.01	0.02	0.27	0.11	<0.01
Total cases	51	241	212	97	81

*Total cases 737, missing 55.

It is important to note that although farm productivity is positively affected by the off-farm occupation of the head in the case of very small farms, this does not mean that the households in this group derive most of their incomes from farming. Nor does it mean that they are able to match the production of larger farms in absolute terms. For the majority of households in this group, main incomes derive from off-farm, as we demonstrated in the previous chapter (Table 11.1 and Table 11.4). In this group, farm intensification means foremost that complementary incomes are being raised from dairy farming or vegetable cultivation and/or that food is partly self-provided from small stands of maize, beans or bananas on the mountain or on the plains.

Off-farm incomes and vegetable cultivation

Our productivity index is limited to what can be considered 'traditional' or 'conventional' crops. The boom in tomato and vegetable cultivation occurred the year after the survey and went largely unrecorded by this data collection method. Still, we are able to confirm the association between off-farm occupation and a shift of land use into vegetable cultivation for the market. At the time for the survey about 16 per cent of the households in the villages bordering the Arusha-Moshi road (West Meru) reported that since the time they inherited their land, they had taken up cultivation of vegetables for the market. We have chosen West Meru for this examination due to the presence of irrigation in this area, a condition that facilitates vegetable cultivation. As seen in Table 12.3, also this land use trend is clearly associated with the off-farm occupation of the household head.

Table 12.3: *Occupational status/income source of household head and change of land use into cultivation of vegetables for the market. West Meru farmers. Columns in per cent of respondents.*

Change of land use into vegetables	Occupational status		Total
	Farm	Off-farm	
No	87.7	77.4	84.3
Yes	12.3	22.6	15.7
Total	100.0	100.0	100.0
Total cases	318	131	449

Total cases 451, missing 2. Chi² 0.001.

Further cross-tabulations reveal that respondents' age influence the adoption of vegetable cultivation in the sense that young households are more inclined than older ones to change into growing tomatoes. However, young households grow tomatoes regardless of their occupation. It is mainly the older households that are influenced by off-farm work in their decision to shift land use into tomatoes/vegetables. In a similar way, off-farm incomes may lead to the adoption of tomato cultivation among households with less educated heads (Chi² 0.001), while those with better education will grow vegetables regardless. It is likely, however, that the education factor operates through the age variable, limiting the effect of off-farm work to the older, and hence less educated group for which the association is statistically significant (Chi² 0.008).

Interpreting farm performance under conditions of factor interdependence

From what has been presented so far in this and the previous chapter, it should be obvious that the interpretation of the impact of one variable (i.e. occupation of household head) on farm performance is difficult given the simultaneous association and interdependence of this variable with the age, sex, educational level, farm size etc. of the respondents and the households investigated. What is the effect of off-farm incomes on farm performance given these other factors? Part of the answer has been presented through the

cross-tabulations discussed above. However, there is a limit to how far such tabulations can be pursued without losing track of the original association. Given that the farm performance variable is a quantitative one, regression analysis may provide a more powerful instrument for finding out the relative significance of the independent variables we have been discussing.

This also gives us the possibility of adding into our analysis the question of labour. How does off-farm work relate to labour availability within the household, to the hiring in of labour from outside, and to the overall farm performance? The size of the household labour force is expressed as adult equivalents.¹³⁹ 'Hiring of labour' is an indexed variable running from 0-100 and is based on households' hiring of labour for a variety of farm tasks. The higher the value on this variable, the more tasks for which a household hires labour.

The result of this analysis is summarised in Table 12.4. What we can say on the basis of the analysis is that the overall impact on farm performance of the independent variables examined is rather weak, as can be seen from the correlations and the standardised beta-values of the regression given in the Table. All in all, they account for less than ten per cent of the variation (R^2) in productivity observed between the households, the strongest correlations being found for the educational level and sex of the household head, followed by occupation and mountain farm size. Although the influence of these factors is statistically significant under the assumption of a SRS sampling design, we must be careful in interpreting the results due to the added uncertainty that follows from the two-stage sampling design applied in this study (see further below).

139 This is a modification of the household labour force taken from Deere and De Janvry (1981, p.344). It has been slightly modified to fit the local conditions of Meru. The following weights have been applied: children 0-5 years = 0; 6-8 years = 0.3; 9-13 years = 0.5; 14-17 years = 0.8; 18-60 years = 1.0; 61-65 = 0.8; 66-75 = 0.5; 76 and above = 0.3. No distinction has been made between male and female. The rationale for these weights is the minor tasks performed by small children above 6 years such as fetching water and firewood, looking after younger children, and so on. With growing age, but with due consideration taken to the time they spend in school, children will be responsible for more tasks, including regular farm work. By the age of 18, a youth is considered to have gained full working capacity and can participate fully in the social and economic life of society. By the age of 60 and beyond, ageing household members begin to withdraw from agricultural tasks and participation in the labour market leaving most of such activities to younger household members.

What is revealed by the regression, in which we control for the interdependence between the independent variables, is not entirely unexpected. The negative correlation for sex means that a household headed by a woman is likely to have a below average performance, a finding that goes along with the circumscribed conditions women are facing with respect to land tenure and decision making in matters of farm management. That educational level has a positive impact on farm performance is also expected given the pay-off generally of investments in human capital.

Table 12.4: *Regression analysis of factors assumed important for farm performance.*

Independent variables	Coefficients:		
	Correlation (r)	Beta std	Sign.
Occupation/income source	0.18	0.08	0.05
Sex	-0.20	-0.11	<0.01
Age	-0.17	-0.07	0.24
Educational level	0.24	0.12	0.03
Farm size (plains)	0.03	-0.02	0.58
Farm size (mountain)	0.09	0.10	0.02
Household labour force	0.06	0.06	0.13
Hired labour	-0.03	-0.01	0.82

Total number of valid cases 737, missing 80.

We can also see that it is the size of land holdings on the mountain that provides an explanation for farm performance, while the size of holdings on the plains does not. This may depend on the greater importance of mountain land generally, but may also be an effect of the generally lower reliability as to statements about the size of lowland holdings. The data indicate that productivity increases with farm size.

It is perhaps also surprising that the size of the household labour force and the hiring in of labour from outside do not have a measurable impact on farm performance, i.e. farm productivity. Our interpretation is that increasing the labour input on the farm with labour hired in from outside may increase overall production through a greater capacity to cultivate larger holdings or maintain more cows. This may not, however, necessarily increase productivity measured as coffee yield per acre or milk yield per cow. In most cases, hired labour is unlikely to perform tasks with the same dedi-

cation and skill as domestic labourers. The most plausible explanation for the low correlation of labour with farm performance, however, is that households in the current situation divert domestic labour to off-farm activities or substitute own labour for hired labour with zero net effect on productivity. Off-farm occupation, finally, is positively associated with farm performance in accordance with our hypothesis but has a rather modest direct effect on farm performance.

We must, however, raise a note of caution regarding the interpretation of the tabulated significance values, taking into consideration some loss of precision due to the two-stage sampling design that was used in this survey (see Chapter Three). With that in mind, significance values for most variables in the regression may exceed the 5 per cent limit and therefore not be fully acceptable. Looking at the variables in the productivity index individually, occupation is most clearly associated with milk productivity where the recorded significance level under the assumption of SRS is 0.02. Also this, however, is barely sufficient in view of the conditions we have defined for statistical significance (Chapter Three). We must therefore see the results of the regression as indicative of what appears as a plausible relationship between off-farm occupation and farm performance. The cross-tabulations presented earlier, and where tests of significance were conducted with the Chi^2 method, support this interpretation. Also informal interviews with household members point in this direction, as well as the statistical analysis to be presented in the remainder of the chapter.

Another limitation of the 'occupation' variable is its dichotomous character. We lack measurement of the absolute level of off-farm incomes, as well as of income relating to farming activities. The inclusion of such variables would have been able to provide a more fine-tuned picture of the impact of off-farm incomes on farm performance than we have been able to show here. We will deal with this problem in a while using occupational categories as proxies for income level. Before that, we will look into the ways of how off-farm incomes affect farm performance.

The direction of income flows – what is paying for what?

Through which mechanisms do the variables in the regression have an impact on farm performance? One hypothesis is that they constitute the means and the know-how for using modern inputs and more efficient methods of farming. Adding households' use of purchased inputs (chemical fertiliser, hybrid maize seeds, dairy cow feed) to the regression increases its overall explanatory value and provides us with a causal model of how off-farm incomes affect farm performance.¹⁴⁰ The result is given in Table 12.5 (the added variables in *Italics*).

Table 12.5: *Regression analysis of farm inputs for farm performance.*

Independent variables	Coefficients		
	Correlation (r)	Beta std	Sign.
Occupation/income source	0.22	0.07	0.21
Sex	-0.20	-0.09	0.09
Educational level	0.28	0.12	0.03
Farm size (mountain)	0.07	0.04	0.37
<i>Fertiliser</i>	<i>0.25</i>	<i>0.12</i>	<i>0.02</i>
<i>Hybrid maize</i>	<i>0.30</i>	<i>0.18</i>	<i><0.01</i>
<i>Dairy feed</i>	<i>0.15</i>	<i>0.11</i>	<i>0.02</i>

Total number of cases 738, missing 380.

When controlling for the use of purchased farm inputs, educational level is the only variable from the original regression that remain statistically significant. Our conclusion is that a higher educational level has a positive effect on farm performance regardless of whether modern inputs are applied or not. The crucial factor here is probably the knowledge and more efficient management displayed by such farmers following their higher education. When such farmers use modern inputs (which most of them do regardless of earning off-farm income or not), production and productivity is likely to improve further.

In relation to the original variables in the regression, the input variables can be described as intermediate or intervening, positioned as they are bet-

140 Input variables are dichotomies (fertiliser and maize seeds being used or not used, and purchased cow feed being used often or rarely).

ween the original variables and the dependent one. In fact, these intervening variables explain the major part of the observed relationship between off-farm incomes and farm performance. Off-farm incomes pay for modern inputs, which in turn increase productivity. Similarly, male sex of the household head and a larger mountain farm size increases the propensity that modern inputs (possibly via off-farm incomes) are being used in agriculture.

One 'problem' in the analysis is the possibility of a reversed causal direction regarding the association between off-farm work and farm performance. As mentioned, interviews with large landowners indicate that (some) farm incomes are regularly reinvested in business activities with a higher return to labour and capital than farming. This is the case also for smaller farmers, but is less noticed since the surplus generated is smaller. This reverse flow of resources, from farm to off-farm, forms an essential part of smallholders' diversified livelihoods and contributes to improved standards of living. In the following, we will concentrate on examining some further evidence to support the hypothesis that off-farm work by the household head leads to higher productivity in agriculture via the purchase of modern inputs (and via other indirect effects of off-farm work).

Looking at how 'landless' youth raise capital for farming provides one piece of evidence in this direction. Before large numbers of households adopted tomato cultivation in 1997 and 1998, groups of young unmarried men had for some years been practising cultivation of tomatoes for the market on land rented from relatives and friends. We met and interviewed some of these groups, mostly consisting of 2-4 persons. In all cases, the capital for renting land and buying inputs was raised from off-farm work, hence supporting our hypothesis (see also Chapter Nine on vegetables/tomato cultivation).

In the case of milk productivity, regression analysis reveals significant associations only for off-farm income (0.02) and use of purchased cow feed (<0.01) while the other variables listed in Table 12.5 are all non-significant (under the assumption of SRS). Labour hired to collect cow fodder is on the border of being significant (0.06), indicating a possible substitution effect between own and hired labour (household members work off-farm and employ cheap casual labour for collecting fodder). Our interpretation is that off-farm incomes improve milk productivity, indirectly via purchase of cow feed (and possibly by the hiring of casual labour for collecting fodder). The

direct impact of off-farm incomes seen in the regression may well prove to be indirect if we had investigated factors for which we now lack data (e.g. veterinary and insemination services, purchase of heifers etc.).

Also in the case of maize production, there are clear and significant associations between off-farm occupation and purchased inputs, for example, in the case of chemical fertilisers and hybrid maize seeds (Table 12.6). The strongest associations are found for hybrid seeds. The link between modern inputs and maize yields were presented earlier (Chapter Ten). Also, there are significant associations between off-farm occupation and labour hired for harvesting (Chi^2 0.02), as well as for transporting crops (Chi^2 0.03).

We found no significant association between off-farm occupation and inputs in labour or kind (fertiliser) in coffee cultivation, however. Traditionally, production costs in coffee cultivation have been met through advance payments (credit) from the cooperative society rather than from external means. With the market terms for coffee now declining, many farmers use a minimum of costly inputs on coffee and direct their off-farm incomes to alternative and more rewarding activities (milk and vegetables) and to food crops for home consumption and sale.

Table 12.6. *Association between occupation/income source of household head and the use of fertiliser and hybrid seeds in maize cultivation (mountain or lowland holdings). Distribution in per cent of column totals.*

Fertiliser*	Income source:			Hybrid seeds**	Income source:		
	Farm	Off-farm	Total		Farm	Off-farm	Total
No	58.5	42.6	52.8	No	56.9	28.9	46.8
Yes	41.5	57.4	47.2	Yes	43.1	71.1	53.2
Total	100.0	100.0	100.0	Total	100.0	100.0	100.0
Total cases	334	160	494	Total cases	333	159	492

*Total cases 737, missing 243 (Cramer's $V=0.15$, $\text{Chi}^2 < 0.001$). **Total cases 737, missing 245 (Cramer's V 0.27, $\text{Chi}^2 < 0.001$)

Type of occupation and farm performance

What level of income and what type of occupation is most conducive for farm performance? As a proxy for the absolute incomes drawn from off-farm

sources we may use different types of incomes/occupation and compare their average score on the productivity index for which the overall mean is about zero. We assume that the highest level of off-farm income is represented by formal employment, followed by business income, according to our discussion in Chapter Eleven. Casual labour generates the lowest level of income of the three, in most instances barely sufficient for the provision of family food needs. The result is given in Table 12.7.

Table 12.7: *Mean score on productivity index by type of occupation.*

Main occupation	Mean score	No. of cases
Farming	-0.09	463
Formal employment	0.17	97
Business	0.27	45
Casual labour	-0.09	39
Total	-0.01	674

Total number of cases 737, missing 63. Sign. 0.000 (Anova)

From the Table, we can see that employment and business income/occupation have a positive impact on farm performance, while in the case the head is occupied with casual labour or with farming, the score on the index is slightly negative (positive values indicate above average productivity, negative ones the opposite). It is the households in which the head does business or is employed that account for the positive association between off-farm income in general and farm performance. All mean scores, however, are within close range of the overall total average suggesting that the variation in farm performance (and income) within the groups is large, and that the impact of occupation on farm performance, albeit significant, is rather small.

A complementary picture is given when one looks at what is the main income source of the household as a whole. Here, households that depend on casual labour (52) have a significantly lower mean score (-0.28) on the productivity index compared to other income groups, which are close to the overall mean (significance t-test <0.01). This indicates that the relatively few households depending on casual labour kind of incomes are hardly at the forefront of agricultural productivity. By and large, casual labour income/occupation appears to be the exception to the generally positive impact on

farm performance that can be observed when the household head is involved in off-farm work.

Off farm occupation/incomes: land improvement or degradation?

We must stress that environmental degradation is influenced by a large number of interactive factors and involving natural as well as man induced processes. In addition to this complexity of interactive forces, there is widespread disagreement about how to define it, how to measure it, how to evaluate its consequences, and so on.¹⁴¹ Here, we are only able to give a few comments and present a few findings that link up with our discussion on the role of markets and income diversification in a context of rapid population growth.

In the case studies, reviews and documentation presented by Lele and Stone (1989), Tiffen et al (1994), and Turner II et al (1993), it is suggested that access to market outlets for agricultural produce is one factor that positively feeds back on the motivation and pay-off of resource conservation. Similar arguments have been raised by Livingstone (1990) and Gould (1992) in relation to the densely populated areas of Kenya. Scoones and Toulmin (1999, 3-4, 45ff) in their review of fifteen case studies across Africa similarly conclude that access to markets plays a key role for intensification and the pay-off of environmental conservation.

Also, to judge from these studies, environmental sustainability or recovery among high-density populations seems to be at least partly conditioned by opportunities of economic diversification. What then is the picture emerging in the Meru case?

Avoiding a lengthy discussion about the definition aspects of land degradation at this stage, we will approach the issue from the perspective of farmers' perception of changes in land and soil productivity. Household heads

141 Writings by, for example, Blaikie (1992), Boesen (2000), Leach (1996), McNicoll (1990), Scoones and Toulmin (1999), and Stocking (1987; 1996) give ample illustration as to the complexity of the land degradation issue in Africa. For a historical background to the Mount Meru environmental situation, see Larsson (1999) and Assmo (1999).

were asked whether they had experienced any change in the ability of the soil to give sufficient yields since they acquired the land. Questions were asked concerning fields with different crops and location, e.g. 'coffee & banana' fields (*kihamba*), within-village fields for 'maize & other crops', and lowland maize fields. For each of these situations, about one third of the respondents reported that they perceived soils to have deteriorated (*'ardhi im-echoka'*), another third that soils were unchanged, and the final third that the soils had improved from the time they had acquired the land.¹⁴²

A look at the demographic and socio-economic characteristics of households that reported improved or deteriorated soils reveals some notable differences in factors assumed to be of importance for farm management. The hypothesis of a positive and statistically significant impact on farm performance following the off-farm occupation of the head is once again confirmed. In this case, off-farm occupation/income is associated with farmers' perception of an improved capacity of the soil to generate crops, while farm occupation more often implies a situation where soils are perceived to decline. The result is consistent regardless of the type of crops grown on the land.

However, also in this case the kind of off-farm occupation matters for how the respondents perceive the state of the land. It is found that the positive association between off-farm occupation and soil improvement largely refers to employment and business income. In contrast, casual labour is more often associated with perceptions of declining soil fertility than any other kind of occupation, including farming. This is illustrated in the case of land for bananas in the cross-tabulation given in Table 12.8. A note of caution should be raised, however, due to the few cases that involve the casual labour category of respondents.

142 The complexity of the land degradation issue has, of course, a bearing on the validity of questions and reliability of the information obtained from farmers in a survey interview with standardised questions. For example, enumerators differ in their recording of farmers' responses, a circumstance that calls for a careful interpretation of the results. In the Table are given the data from the more experienced of the enumerators only, since these better stood the controls we made on consistency of replies. See also Methodology Chapter.

Table 12.8: *Farmers' perceptions of changes in soil capacity and yields by type of occupation/ income source of the household head. Land for bananas. Distribution in per cent of column totals.**

Perceived status of soils and yields	Income source				
	Farm	Employm.	Business	Casual labour	Total
Improved	24.4	61.8	35.4	20.9	29.9
No change	34.2	20.9	30.7	0.0	33.7
Deteriorated	41.4	17.3	33.9	79.1	36.4
Total	100.0	100.0	100.0	100.0	100.0
Total cases	250	45	25	5	325

*total cases 351, missing 18; $\text{Chi}^2 < 0.001$

It should be obvious that (the kind of) off-farm incomes, or the lack of such incomes, only provide part of the answer to why soils may improve or decline or be perceived to do so by the farmer. Controlling for sex, we see that the association between occupation and soil status is significant only for men. About a quarter of the female household heads interviewed report soils to have improved compared to about half of the male heads. When women perceive land as having improved, however, other factors than off-farm occupation explain this. Among such factors are those linked to the age of the respondents. Young household heads (including women) more often than old ones perceive land to have improved regardless of their occupation. For the old ones, however, and then preferably for males, off-farm incomes provides part of the explanation for improved soils.

Educational level generates a similar pattern and probably operates through the age variable. More educated household heads experience improved soils regardless of occupation, while lower educated ones will do so when they have access to employment and business type of occupation. Heads who report improved soils have on average a larger farm size than respondents who report deteriorating soils, and they have more often cows (manure) and in greater number.¹⁴³ Households experiencing declining soils, on the other hand, are often female headed, elderly and less educated,

143 These differences are statistically significant at 0.01 or below when tested with T-test for means. Given the two-stage sample design we believe they are significant at least at 0.05 level.

or rely on meagre incomes from farming, casual labour or remittances from children. Seen in this way, land degradation may to some extent be linked to factors that reflect the final phases in the life cycle of a household and to poverty indicators. Among other things, it is manifested in a lower capacity to mobilise strategic farm inputs such as labour, manure or fertilisers, inputs which we have seen are partly dependent on age related factors such as educational level and off-farm incomes in the form of employment or business.

Also, physical factors influence the association between off-farm incomes and changes in soil capacity. For households cultivating steep slopes, occupation of the head has no significant effect on the status of the soil. Perceptions of improvement or deterioration may here be linked to other factors, including the household characteristics discussed and the undertaking of soil conservation work. It is plausible that households deter the effort and the cost of investing or rehabilitating steep slopes given the relatively low returns from such efforts compared to other allocations of labour and capital, including off-farm activities.

It is also true that incomes from off-farm employment sometimes are so low that they are barely sufficient for sustaining the household on food purchased on the market, and even less so for buying costly farm inputs or employing farm labour. Our data confirms that this is the case for the category of households depending on casual labour income. In this situation, it may be correct to say that this type of off-farm work hardly promotes agricultural intensification. Whether it actually leads to land degradation, as argued by Assmo (1999), or to simply less intensive forms of farming is a more difficult question. Our data point at the possibility that casual labour income is part of a poverty and life cycle condition that may lead to deteriorating soils, although the few cases investigated raise a note of caution. It should be taken into account that off-farm work in general often takes place during slack seasons in agriculture and therefore is not necessarily in conflict with farming activities.

It is, however, probably also correct to say that the negative effects on the land are smaller with household members working off-farm than without this possibility, also when such incomes are very low. This is on the basis that opportunities for off-farm work reduce the number of people who need to derive an income from the land, a conclusion that is in line with what the case studies discussed by Turner II et al (1993) indicate.

Concluding comments

Given the limitations of the survey sampling design and data, particularly as to the lack of quantification of off-farm and farm incomes, what the results do show is at least not in contradiction to the hypothesis that diversification has a positive impact on farm performance. Informal interviews confirm this picture of a positive cross-fertilisation between different sources of incomes. This makes diversification a more successful recipe than specialisation, not only for farm performance but most likely for the overall wellbeing of the household. This is in line with the arguments we referred to in Chapter Six and Seven that diversification promotes agricultural growth, is environmentally sound, and decreases the economic risks associated with farming in settings where markets and the climate are insecure (Petit and Barghouti, 1992; Timmer, 1992).

What is found from the analysis is also largely in line with Netting's general thesis, i.e. that diversification and off-farm incomes are a crucial component of smallholders' livelihoods and ones that contribute positively to the sustainability of the intensive form of agriculture practised in land short settings (Netting, 1993a). Controlling for a variety of circumstantial factors and household characteristics, we are unable to find support for the proposition that off-farm work in general constitutes a drain on agricultural performance and leads to soil degradation. This is not to say that there are no such cases, and the evidence provided by the households depending on casual labour income suggest that income below a certain level is counterproductive from an agricultural point of view. Such incomes are linked to low productivity, extensive forms of agriculture and even land degradation, as noted by Assmo (1999). At the very least we must therefore distinguish between different types of off-farm occupations/income levels. The general pattern, however, is that off-farm incomes in the Meru case have a positive impact on agricultural performance and, we will argue, on the overall economic wellbeing of the household.

We did not find support for the view that households reduce their attention to the land because it is too small. A small farm size may nevertheless prove too small to provide the income required and supplementary means from outside the farm may therefore be necessary. A small farm size propels diversification as well as intensification. Lack of farm investments is rather

due to old age and/or shortage of domestic labour or inadequate financial means due to low off-farm earnings (casual labour). So far, the number of people depending on casual labour income is relatively few, as we demonstrated in the previous chapter.

As it looks, the Meru situation has some resemblance with the conclusions born out of the study on Machakos in Kenya by Tiffen et al (1993), namely that off-farm incomes have a positive impact on local agriculture through transfers of capital for investments in land and inputs, by flows of ideas and know-how in farming and by creating aspirations of rising living standards.

The close proximity in Meru to a viable and dynamic urban centre is another similarity to the Machakos case, and a crucial one since the rural-urban interface provides much of the incentives and demands for a market driven and local agricultural growth. It is in a way typical that the clearest impact on farm performance from off-farm occupation/incomes is found for crops for which there is an urban demand or which are essential for household food security (i.e. milk, vegetables, maize and beans), while no such links could be confirmed for coffee, a circumstance that bears some testimony to the relative economic decline of the latter crop.

In this specific context, the increase in off-farm opportunities following economic liberalisation can be assumed to be a conducive condition for agricultural growth and for staving off environmental decline, since it provides incentives for investments in agriculture, and relieves some of the population pressure that has been building up on the land in the past decades. Farm performance, including the pay-off of conservation, however, is also a matter of government policy. For example, whether farm gate prices are attractive, necessary infrastructure requirements are forthcoming, institutional stability is ensured, farm implements and consumer goods are available at affordable prices, private investment and farmer organisations are encouraged, extension and credit services are responsive to farmers' demands etc. are primarily government issues. As noted by Scoones and Toulmin (1999, 4), "*...whether farmers are willing and able to make the necessary investments depends on the expected returns in relation to the other options available to them.*"

Concluding notes on Part II

In the preceding chapters we have seen how the Meru economy has become more diversified, more market oriented, and more dependent on resources outside the mountain. The people on Mount Meru have shown great skill in adapting to the shortage of land and in taking advantage of the opportunities brought by their integration into external markets. To a great extent this adaptation has occurred in the form of agricultural intensification by which the value output from the land has increased substantially and resulted in per capita income increases in the course of the last century.

Yet, in the recent decades serious production constraints within small-scale agriculture have surfaced. These are prompted by an extreme fragmentation of land and by worsened terms of exchange for traditional cash crops and food staples such as coffee and maize, resulting in a production below the potential level for these central crops. The more recent demand for milk and vegetables from domestic urban markets has offered some relief to this situation and provided avenues for continued agricultural intensification. However, in spite of these developments it seems unlikely that agriculture under the present demographic, institutional and policy conditions can provide substantial increases in per capita incomes and living standards save for a fraction of the population.

In addition, the increased need for cash among households for meeting services that used to be free and for purchasing consumer goods that were unavailable during the years of economic crisis make households look for off-farm income options. Coupled with improved opportunities for earning cash income from self-employment and petty business, these factors appear to be among the most obvious driving forces behind the 'de-agrarianisation' that currently occurs in Meru and which involves young households in particular.

Can a society where these trends of economic diversification and new forms of livelihood are so conspicuous, still be called a peasant society in which the small family farm is at the centre of economic and social life? Our preliminary conclusion is that 'de-agrarianisation' to a greater extent implies a change of livelihood than one of social identity. Meru household members are deeply attached to the land and their family farms, and the gradual emphasis on off-farm incomes has not meant erosion of this attachment. Be-

fore a more definite answer is proposed in this field, however, we should look more closely into a related dimension of the peasant debate. This concerns the proposition that the peasantry will dissolve under the force of capital accumulation by wealthy peasants, a topic we briefly brought up in Chapter Two and Chapter Seven. Also, in this case are we interested in the effects of land shortage and off-farm incomes, since it can be argued that wealthy farmers diversify in order to accumulate while poor farmers do so in order to survive and as a result they will display increasing disparities in income and wealth.

This is the topic of Part III, to which we now turn.

PART III

The agrarian
question revisited

Family farming,
economic polarisation
and social mobility

Peasant differentiation – the classical controversy revisited

Introduction

In Sub-Saharan Africa, the economic crisis of the 1980s and subsequent macro-economic adjustments have added new substance to the near century old controversy regarding the inequality generating effects of market driven agricultural development. This controversy draws on the theoretical and empirical works of Lenin and Chayanov regarding the fate of the post-revolutionary Russian peasantry (Chayanov, 1966; Lenin, 1974).¹⁴⁴

In this chapter, we will discuss this controversy by seeking out some relevant parts of its rich theoretical heritage for our subject matter, Meru society. Like in most smallholder societies, households in Meru are stratified in terms of resources and income. The causes and character of this differentiation, as well as its long-term and policy implications, however, are less clear than may appear at first sight. Hence theory is important as a guiding and structuring tool for our empirical exploration.

The controversy concerns several interrelated aspects regarding the path taken by rural societies as they economically and politically become integrated with the world outside. Theoretically, these standpoints have been heavily criticised and subjected to revision as reality has given ample evidence as to their respective shortcomings. For inheritors of the Leninist position, today's *neo-Marxists* or political economists, the issue of peasant inequality has been gradually framed in a context of colonial legacy, interna-

144 For an overview, see for example, Harriss (1982, 23 ff). See also Netting (1993, 189-231).

tional capitalistic relations, class-based state politics, and lately, policies of structural adjustment and economic liberalisation. A major problem for neo-Marxists has been to account for the fact that in peasant societies throughout the world, prevailing inequalities have failed to develop into class structures in spite of long and extensive market exposure. Also the Chayanovian position has been scrutinised, however, not least on the validity of the thesis of subsistence based rationality and 'demographic differentiation'.

The classical inroad to the discourse on differentiation goes via Marxist theory. Here, social differentiation is linked to the varying success of households producing for the market in competition. An alternative approach is offered by population theory. In the population growth perspective, largely overlooked in the classical thesis of peasant change, differentiation is associated with competition over resources made scarce by changes in population density. Both are of relevance to the Meru case, which is characterised by a long-standing production for the market *and* a severe land shortage caused by dramatic population increase. At the same time, both perspectives are limited by their focus on agricultural specialisation, while our approach include the possibility of diversified livelihoods. Specifically, in the context of market integration and population growth, what are the implications of diversification for the pattern of social and economic inequality?

The central controversy: capitalist farmers versus proletarian peasants

In the Tanzanian context, Shivji's work on 'Class Struggles in Tanzania' from mid 1970s is the perhaps most well known example of a neo-Marxist interpretation of the Leninist perspective on differentiation (Shivji, 1976).¹⁴⁵ At the time, Shivji was explicit on the principal issue that peasant differentiation originated from the colonial introduction of cash crops and was to be seen as a substantial phenomenon in rural areas (ibid, 53-4, 111-5). He was, however, surprisingly vague about the exact nature and extent of this differentiation. According to Shivji, the class of 'kulak' farmers was

numerically small and politically weak for several historic reasons.¹⁴⁶ The absence of land as a dominating political issue, absence of individualisation of land tenure, and a general lack of capital accumulation and investment in agriculture prevented the emergence of a big and politically strong class of wealthy, commercial farmers (ibid, 50-2).

Interpreting Shivji on this point, the absence of class formation amongst the Tanzanian peasantry as a whole during colonial rule and until present seems to depend primarily on the fact that commercial agriculture did not embrace the entire rural population strongly enough and in all its dimensions of production, particularly land. Implicitly, this refers to a situation with a generally low population pressure on land.

At a more general level, however, Shivji's vagueness reflects what can be characterised as a century long wrestling within Marxism regarding the general validity of the Leninist thesis and in view of the fact that the peasant transition to capitalist agriculture at large has failed to come about. In later writings, Shivji has attempted to explain the preservation of the Tanzanian peasantry by arguing that its continued existence is beneficial to capitalism since it has a cost of reproduction below that of wage labouring. In this way the peasantry as a whole may become exploited and impoverished, yet be functional to the international division of labour. Locally, an urban-based 'comprador' class mediates this exploitation (Shivji, 1992).

The peasantry and the state

In the Tanzanian case, these interpretations involved a scholarly pre-occupation in the 1970s and 1980s with the failure of the government to eliminate inequality and bring about socialism, the explanation for which was

145 Other contributions within this tradition, and inspired by the Tanzanian experience of African Socialism, are writings by, for example, John Saul and Lionel Cliffe. See, for example, Cliffe (1972/73). In the same general theoretical perspective a number of case studies have emerged, among them Sender's and Smith's longitudinal study from West Usambara mountains, concluding that peasant differentiation is among the most obvious features of Tanzania rural society (Sender, 1990).

146 In this context, the Russian term 'kulak' refers to a multi-faceted semi-capitalist farmer employing labour, renting farm machinery and capital, and investing in crop purchasing, retail business, transportation, and so on. See for example Bernstein (1982, 170-1).

sought in the specific relations of the state and the peasantry (see for example contributions by Saul (1972), Shivji (1992), and van Hekken (1972)).

Similar to Shivji, Raikes drew attention to the possibility that the peasantry as a whole can be subordinated to the requirements of international capital while still formally owning the land they cultivate (Raikes, 1978, 286ff; 1982). In this case peasants produce export crops under the tight control of multinational corporations, a condition that limits the scope for individual accumulation and promotes the preservation of a peasant middle class (Raikes, 1978, 286). A special circumstance in Tanzania after 1967 is the fact that peasant subordination took place under state production schemes rather than under private capital, hence Shivji's and others' concern about the strategic role of a state bureaucracy in the exploitation of the peasantry.

Within the Marxist tradition, Sender and Smith (1990) presented a somewhat different perspective on the basis of a study of the peasantry of the West Usambara Mountains. According to them, the pervasive poverty in rural areas could only be eliminated by a government policy that supported further accumulation by rich farmers in order to develop the forces of production. This interpretation is in line with another Marxist standpoint, that of Bill Warren, arguing that capitalism may act as a powerful engine of progressive social change and that a shortcut to development by skipping the capitalist stage to socialism is not possible (Warren, 1980).¹⁴⁷

Inequality and power

The fact that large-scale and capitalist farmers often maintain a dominating position and in some countries or regions hold a major part of the best arable land, such as is the situation in central Kenya, Zimbabwe, or in Northern Tanzania, also has to do with political power. According to Taussig (1982), large landowners dominate not because they are more efficient but

147 See for example Booth (1995, 42ff) for a critique. Although not a Marxist but Marxist inspired, Hydén has similarly launched the idea of the impossibility of moving from a pre-capitalist to a socialist society by skipping the capitalist stage in development, a good example of which is the failure of African Socialism in Tanzania (Hydén, 1983).

because they receive various forms of direct and indirect subsidies and because they are politically powerful and influential (Taussig, 1982).

Policies suited to fit the production conditions of family farmers may then fail to come about because they would be in conflict with the interest of other social groups, including those of large landowners and their allies in the state bureaucracy and government (Bates, 1988). In the Tanzanian case, Kaori Izumi has demonstrated this circumstance in a recent research project on the politics of the new land tenure legislation where smallholders have lost out to influential urban groups (Izumi, 1998). In addition, the state may lack the manpower or institutional and financial resources, or even the conviction that small-scale agriculture is worth supporting.

Lipton has argued that the dominating position of large landowners is an aspect of 'urban bias' in development (Lipton, 1977; 1982, 68ff). 'Urban bias' implies that an urban elite, consisting of state bureaucrats, politicians, businessmen, trade union leaders, intellectuals and others, directs the major part of scarce development resources into urban areas. Although smallholders are more efficient, the urban elite favours large-scale farmers with inputs and investments in exchange for cheap food for urban dwellers because such farmers are more likely to produce for the market than are smallholders. As a result "*poor people stay poor*" (Lipton, 1982, 68).

In a similar vein, Bernstein concludes that richer farmers often get the most out of development projects, not because they are more efficient or progressive, but because they are able to influence local administrations about the allocation of project resources (Bernstein, 1992, 73ff). For Tanzania, this has been demonstrated by Saul (1972), van Hekken et al (1972), and van Velzen (1973) in relation to the difficulties in disseminating modern farming and socialist principles at village level.

Inequality in farm size and income is consequently not simply a result of who is most productive, but to a great extent a matter of how certain strata more than others are able to draw on a large network of relatives, villagers, politicians and state functionaries. Berry, for example, draws attention to the power dimension of rural inequality and argues that in a situation of institutional ambiguity and negotiable rules, accumulation and resource control will be most successfully pursued by those farmers who have access to both local and external social networks (Berry, 1993). The relation of smallholders to the larger political economic system and the factors forming

this relationship are therefore essential aspects of the conditions and future scope of family farming in a country like Tanzania.

Livelihood diversification and inequality

The classical approach saw rural differentiation occurring from economies of scale and specialisation and from households' exchange of farm produce on the market, while turning a 'blind eye' to the occurrence of labour 'straddling'. There is today mounting empirical evidence, however, that diversification of incomes and labour is a more common livelihood strategy than specialisation, also among wealthy households. The question of inequality in rural areas is therefore not only a matter of distribution and accumulation of conventional farm resources but to a great extent bears on incomes and resources generated from outside the agricultural sector. As a result, new occupational categories and class formations may occur in rural areas (Bryceson, 1997b, 244ff).

According to Bryceson (1997b), diversification and 'de-agrarianisation' imply growing inequality in rural areas of Africa and are major contributing factors to class formation within rural societies (Bryceson, 1999b, 26ff; Bryceson, 1997b, 249ff). While wealthy farmers diversify in order to accumulate, poor farmers do so in order to survive. According to Bryceson, the cumulative advantages and disadvantages built into the combined effects of large farm assets and high off-farm incomes for the rich and small assets and low incomes for the poor tend to lead to the dissolution of the peasantry through a process of accelerated differentiation. While some farmers transcend peasant agriculture and become large-scale capitalist farmers, others (the majority) become landless or near landless resorting to off-farm work as a survival strategy (Bryceson, 1997b, 244ff).

Save for the fact that specialisation rather than diversification was seen by the classics as the principle driving force of polarisation, there is a clear resemblance between the Leninist position and the inequality outcome of 'de-agrarianisation' as proposed by Bryceson. This reasoning also resembles more recent neo-Marxist views on inequality as advocated by Henry Bernstein, describing smallholders as 'petty commodity' producers. While commodity production for a few farmers may mean possibilities of 'extended

reproduction' (accumulation), for the majority it is a matter of 'simple' reproduction (maintaining the units of production and reproduction). In a situation where worsened livelihood conditions (due to market exposure, state policies, population pressure etc.) make subsistence farming less of a fallback option, many households become subject to a 'reproduction squeeze', signalling a process of marginalisation and dispossession (Bernstein, 1982, 160ff; 1992, 30-4).

Constraints and opportunities

Needless to say, these positions and scenarios are contested. Generally speaking, those advocating increasing differentiation focus on structural constraints and forces while downplaying the opportunities entailed in social and economic change. Bryceson, for example, is vague about the prospects of upward social mobility for poorer strata of the rural population as a result of diversification, possibly because the field studies she refers to provide little empirical evidence in this direction (see Bryceson and Jamal, 1997). In contrast, Seppälä is more cautious about the emergence of class polarisation. Based on fieldwork results in a rather remote village in Tanzania, which may not be representative for the situation in areas close to markets, he nevertheless argues that differentiation may increase as a result of diversification. However, diversification also holds a potential for enhanced social mobility given that the difference between success and failure following entrepreneurship and shifting network constellations is often quite small (Seppälä, 1998, 134ff, 199).

Lipton argued, admittedly before the 'de-agrarianisation' debate that there is a tendency among scholars of the Marxist perspective to 'victimise' rural dwellers (Lipton, 1984). Hence, the argument of picturing family producers at the whim of market forces and the state is inadequate in view of their inherent ability both to survive under hardship and positively contribute to economic growth when terms of production are favourable.

What is certain is that all peasant societies display inequalities in incomes and basic assets. The important matter, however, is if these reflect long-term processes of accumulation and dispossession leading in the end to the formation of distinct classes. When talking about class formation, we must

necessarily refer to processes of cumulative advantages and disadvantages that imply obvious limitations to social mobility and are more consistent and long-lasting than those related to the life cycle.

The family farm or peasant economy perspective

In contrast, the peasant economy perspective, deriving from Chayanov's theory, claims that peasant or smallholder agriculture works according to a logic which makes it capable of withstanding pressures from external markets and political forces. According to this perspective, family farmers are able to preserve specific relations and terms of production that not only make them compete successfully with capitalist farm enterprises, but also forestall processes of class differentiation (Chayanov, 1966; Lipton, 1984; Netting, 1993a; Shanin, 1972).

Lipton (1984), for example, is critical of the (largely neo-Marxist) view that the peasantry or Family Mode of Production (FMP) is at the whim of capitalists or the state. He accepts the arguments that FMP is concentrated to sectors where capitalist production is unprofitable, that it constitutes a sponge for labour surplus in economic recession and a reservoir in boom, that it represents free care for the young and the old, and that it provides unpaid domestic labour and therefore can endure low wages and reproduce at low cost. These are characteristics that can be exploited by capitalist enterprises or the state. However, at the same time, these arguments render an image of helplessness to family farming and FMP that denies its inherent qualities.

What are these qualities? We discussed some of them in Chapter Two, in which we introduced the Chayanovian or family farm perspective and discussed the basis and rationality of the decision making and labour allocation made by family farmers. We will not repeat the arguments at length here. It is worth noting, however, that in the 'peasant economy' perspective, the small family farm appears to provide an efficient and flexible framework for organising and supervising labour and for co-ordinating all the different elements and management aspects of the complex and labour intensive cul-

tivation systems typical of smallholders, as well as the off-farm activities to which household members regularly turn. This perspective focuses on the utility maximisation rather than the profit maximisation character of the family farm household, and on the managerial superiority and motivation of own account farming and self-employment (Dyer, 1997, 114, 117; Lipton, 1984; Lipton, 1993; Netting, 1993). It is partly on this basis that family farmers are able to compete successfully with capitalist farms and that trends of economic polarisation are forestalled.

Still, we can observe that inequality in smallholder societies is prevalent. In the classical debate, Chayanov claimed that such inequalities reflected temporary variations in farm size linked to the shifting consumption needs of households in different phases of the life cycle, i.e. 'demographic differentiation'. But can Chayanov's model of demographic differentiation serve as an explanation of inequality in today's situation when family farmers increasingly rely on incomes from outside farming? If not, how can we explain and interpret what is there for everybody to see, namely that farmers between themselves diverge in wealth?

'Demographic differentiation', and its limited applicability

It is quite obvious that Chayanov's micro-economic model rests on a number of conditions that seriously limits its general applicability.¹⁴⁸ For example, it assumes land to be readily available and households to be self-sufficient with no involvement in the market regarding production or off-farm incomes. While conditions of land abundance and subsistence farming may have been applicable to Russia of the 1910s or 1920s, this is certainly not the case for most of today's peasant societies, including those in the highlands of East Africa.

Demographic factors, however, are not unimportant for the emergence or containment of social differentiation in land short and market oriented societies, on the contrary, but their influences may be different from those suggested by Chayanov. Perhaps the most obvious consequence of land

148 For discussions on the assumptions and applicability of the model, see for example Netting (1993,295-319), Deere and De Janvry (1981), Harrison (1979; 1982), and (Hunt, 1979).

shortage is that every new generation of households will have to start its life cycle from a lower absolute level of land resources than the previous one. This creates a generation-based differentiation, which although demographic in origin is different from the one linked to the life cycle. In a study of the Peruvian peasantry, Deere and De Janvry (1981) concluded that under land shortage many heirs to the land constituted the most important reason for young farmers approaching the ranks of semi-proletarians or proletarians. In the African context, Bryceson and Jamal (1997) describes a similar land alienation process as an explanation for the increase of diversification and 'de-agrarianisation' in rural areas.

Another related and implicit assumption of the model is the one of reproductive homogeneity. For the life cycle to repeat itself in a similar fashion over time, peasant families must experience similar material conditions of reproduction so that fertility/mortality levels do not systematically differ between families. In an African context of customary land tenure, systematic variations in fertility/mortality levels have consequences for wealth, i.e. farm size. Household strata with many heirs to the land will subdivide quicker than strata with few heirs (Netting, 1993, 200-2ff.) Consequently, actual farm size is not only a result of the age or life cycle position of a household, but also depends on the size of the land inherited. The latter is in turn determined by (i) the total size of land held by parents, (ii) number of siblings (male heirs) sharing the land.

In a study of a farming community in Kisii District, one of the most densely populated areas in Kenya, Bager (1980, 50) found that the main reasons for inequality in land holdings were precisely the demographic factors described above, i.e. variations in the rate of land subdivision coupled with an unequal distribution of parental holdings before the closure of the land frontier. Households with many sons subdivided quicker than those with few sons, and those who had recently subdivided had less land than those who had not yet done so. At the same time, as population growth continued to accelerate the rate of land fragmentation, a pattern emerged of generational inequalities in land size. Old men had large holdings, young men had small plots.

It seems therefore reasonable to assume that in places of land shortage, there may be a demographically induced differentiation different from the one associated with the Chayanovian life cycle model. This differentiation

stems from (i) a generation-based inequality in access to land, and (ii) variations in the rate of land sub-division due to unequal levels of fertility/mortality for different strata of households.

The impact of markets and income diversification

Another common objection to Chayanov's model is that it is rendered invalid in a situation where production is directed to the market, as is often the case in areas where land shortage and intensive agriculture have developed (Netting, 1993). Chayanov was not unaware of this possibility, however, and proposed that under a situation of land shortage, and with developed markets, the life-cycle would express itself predominantly as a shifting ratio of own versus hired labour in farming and in the extent by which 'excess' household members seek incomes from outside the farm (Chayanov, 1966, 68, in Deere and De Janvry, 1981, 339).

He also proposed that in such areas, households would increase the level of land intensification in order to meet growing consumption needs (Chayanov, 1966, 234ff). In the Kisii study referred to above, Bager found some support for this proposition. When household members were many and the land small, households tended to rent additional land, plant more cash crops and cultivate them more intensively. Income per acre was thus higher for small farms than for large farms (Bager, 1980, 62-3). Instead of looking solely at the *quantity* of cultivated land as a function of family size, we would thus need to broaden our focus to include the *quality* or intensification aspect of the land cultivated.

Netting's general objection is that neither household size nor consumer/worker (c/w) ratio alone are very accurate predictors of labour input in intensive cultivation systems with a great part of the production intended for the market and household members involved in off-farm activities. The number of different crops involved in such a system, the mix of subsistence and cash crops, the variation in the size of land and capital, proximity to market centres, terms of exchange, availability of consumer goods, opportunities of off-farm labour, farm taxes, access to credits, managerial skills, personal aspirations, etc; all these factors tend downplay the relative signifi-

cance of the consumer/worker ratio as a determinant of labour intensity and the marginal utility of labour (Netting, 1993, 312 ff).¹⁴⁹

Hunt suggests that in a situation where access to land is limited, difference in land size is an important determinant of inequality that can only be neutralised by a higher return to off-farm jobs than to farming. The return to such jobs is largely a function of educational level and favours those households who can afford to pay for higher education. Hunt (1979, 267,277) argues that the concurrence of large holdings and high off-farm incomes may accelerate rural inequality, a proposition that is in line with that of Bryceson (1997b, 244ff).

The sexual division of labour may also invalidate Chayanov's model since it does not consider intra-household relationships (Harrison, 1979,1; Hunt, 1979). In the case where such a division is rigidly maintained and at the same time high returns in farming or in off-farm jobs are reserved for one sex, then variations in the male/female ratio between households will determine variations between households in labour allocation and per capita income (Hunt 1979,277-8).

Conditions of accumulation

It follows from the Chayanovian model that the main conditions of resource accumulation are demographic, among them a favourable c/w ratio or dependency ratio. This has been criticised by, for example, Harrison, who claims that poor peasants generally face lower returns to labour than rich peasants do. Furthermore, poor peasants pay more for rented land and farm inputs, obtain lower prices for crops sold and lower income for non-farm work, etc. These factors constrain their upward mobility in spite of favourable c/w ratios (Harrison, 1975; Harrison, 1979; 1982; Hunt, 1979,255-6).

The sacrifices made by parents to give their children formal education is perhaps the best example of long term investment among African peasants. In the Kenyan study referred to above, Hunt found that off-farm incomes accounted for most differences in wealth between households. Income level

149 Netting supports his arguments by reference to a large number of empirical studies that show the declining influence of the consumer/worker ratio on household members labour intensity. Also included are factors mentioned by Hunt (1979, 279).

was highly determined by level of formal education, which by households was seen as a form of investment that lowered wellbeing at one time in order to raise it in the future (Hunt, 1979, 271, 275ff). This critique points out the limitations of the model where conclusions drawn under the assumption of subsistence production do not hold in a situation of market oriented farm production and off-farm incomes.

In a similar way one can question several other explicit or implicit assumptions built into the model. For example, Chayanov assumed that households had equal access to information and technology and that management skills were equal to all households. Off-farm incomes and education are examples of factors allowing some farms to have a larger risk margin and be more in favour of innovations (Hunt, 1979, 248-9, 257).

A modified life-cycle model.

The fallacy of the Chayanovian model implies that subsistence consumption needs are insufficient as an explanation of observed labour allocation and income disparities in land short and cash crop producing smallholder societies. However, this does not rule out the idea that the life or family cycle has a bearing on the wealth of a household. Generally, it sounds reasonable to assume that wealth is accumulated and dispersed as a household travels through the life cycle (Greenhalgh, 1985, 575-6, in Netting, 1993, 212).

Netting's empirical review shows that labour allocation in intensive and market oriented smallholder agriculture is determined by a multitude of factors apart from basic consumption needs. Consumption matters, but is highly influenced by size of land and capital, terms of trade, availability of consumer goods, educational level, opportunities of off-farm incomes and personal aspirations. Under these circumstances households may consume and accumulate resources far beyond subsistence needs, and life cycle trajectories may differ widely between individuals and households of similar age and size.

An egalitarian peasantry?

Among the multitude of studies in the wake of Chayanov's micro-economic model of self-sufficient households are those claiming that peasant societies encompass certain cultural characteristics and institutions that tend to slow down social differentiation. Customary land tenure is one, according to which every household or family has a right to land for subsistence. Other traits include strong social control, horizontally extended bonds of solidarity, and arrangements of reciprocity and redistribution. Associated herewith, for example, is Foster's model of 'the limited good' according to which peasants feel morally obliged not to avail themselves of economic opportunities as this would be at the expense of somebody else, and with collective sanctions against individualism and entrepreneurship (Foster, 1962). Wolf's (1966) classical study 'Peasants', in which horizontal networks and household alliances are seen as an insurance against misfortune and too conspicuous inequalities, also belong here. Included are also Scott's 'moral economy of the peasant', and Hydén's 'economy of affection' (Hydén, 1983; 1990; Scott, 1976). In the words of Hydén (1990, 197), in rural Africa "...various forms of reciprocal arrangements ... [have] ... acted to conceal any tendency toward marginalization of a certain class..."

Netting notes the appeal of Chayanov's 'peasant economy' to a number of anthropologists and others who, unfortunately, have misinterpreted peasant societies as "*isolated, self sufficient and made up of altruistic social individuals who are not economizers.*" (Netting, 1993, 298,318). Several scholars have assumed peasant societies to be homogenous and egalitarian, often using such assumptions as a baseline for assessing the impact of colonialism or government interventions. Others have done the same, but for more explicit political or ideological purposes. Not least the 'Ujamaa' ('familyhood') ideology in Tanzania encapsulated such an idealisation of the peasantry, stressing traits of egalitarianism, solidarity, reciprocity, kinship ties etc. According to this view, individualism and personal enrichment, were evils caused by colonialism and capitalism that threatened to alienate a great part of the rural population from the benefits of development (see for example speeches by Nyerere, 1968, and Maghimbi, 1992).

The need for empirical verification

In this section we have touched upon several factors that influence farm size and labour allocation, and at the same time constitute serious objections as to the general applicability of the Chayanovian model of demographic differentiation. Actual disparities in wealth are the result or balance of both differentiating and levelling forces, some of which are demographic in nature. As suggested by some of the case studies referred to, off-farm incomes may contribute to economic inequality in a more substantial way than do farm assets and farm incomes alone, but may also level out initial disparities in farm size. Educational level, for example, seems to be an important indicator of the size of incomes obtained from off-farm work. The role and impact of the various factors discussed is above all an empirical question.

Population growth and differentiation

It is noteworthy that a great deal of the discussion and discourse on peasant differentiation departs from the encounter of rural societies with the economic and political forces of colonialism and capitalism, and at the same time downplays or disregards the competition over resources invoked by population growth. Typical of Marxist orientations is their view of pre-colonial agrarian societies as egalitarian, homogenous, independent and subsistence oriented. Labels such as 'primitive communism' and 'lineage mode of production' are used for describing pre-colonial agrarian societies (Coquery-Vidrovitch, 1978; Meillassoux, 1978a; 1978b). In these societies the main form of differentiation is between men and women, and between elders and youths.

The real situations in Africa that most closely resemble the model of 'primitive communism' or 'the lineage mode of production' are found among shifting cultivators where land is sufficiently abundant to allow usufruct land rights to all members of a community. Where such a land use has been replaced by intensive agriculture, the egalitarian character of resource distribution disappears (Netting, 1993, 193).

Hydén (1983; 1990) shares with Marxists the view that the African peasantry prior to the colonial encounter could be characterised as homogenous and egalitarian. His explanation for this state of affairs, however, differs somewhat from that of the Marxists and lies closer to that of Netting. In Hydén's view, a legacy of land abundance in Sub-Saharan Africa has created a culture of kinship solidarity ('economy of affection') that prevents and delays class formation, also in areas where land shortage now has developed. While in the long run, the development of land shortage and intensive agriculture constitutes a condition for social stratification, in the short run cultural factors may preserve the existence of strong horizontal networks that block the transformation to a class divided peasantry (ibid, 1990).

Historical research has demonstrated that African pre-colonial societies were neither egalitarian, nor was market induced accumulation the sole causes of the inequality that actually existed (Koponen, 1988; Maddox, 1996). Although colonialism in most respects constitutes an important watershed in African history, it sounds reasonable that the basis for 'primitive communism' in Africa to a great extent is found in the historic condition of sparse populations and abundance of land rather than in the relative absence of markets.

Does land shortage (population growth) increase economic differentiation?

With inequality positively correlated to the man-resources ratio, the question is if the combined effects of population growth and commercialisation aggravate differentiation. This is not easily answered, since the two factors are intertwined and therefore difficult to treat in isolation.

For Netting, the major divider in terms of household differentiation, as we have seen, is the transition of extensive forms of agriculture into intensive ones where smallholders begin to exercise individual property rights in scarce resources. Netting concludes that, in a situation of land shortage and resource competition, inequalities tend to become more pronounced irrespective of markets or wage labour being present or not. He suggests that

...smallholders, even in the absence of strong market influences, will display appreciable economic inequality, that this may be exacerbated as the ratio of population to

resources increases, and that participation in a cash economy will not necessarily increase the degree of differentiation. (Netting, 1993, 197).

One reason for inequality in this situation is the diversity in natural resources and their geographical distribution. Land resources, for example, are subject to local variations in soil quality, content of nutrients, slope, erodibility, access to water, proximity to homesteads and markets, etc. Over time, possession of land in different locations within a community tends to result in differences in yield and income. Similar conditions apply to other scarce resources such as water, cattle, pasture, etc. (Netting, 1993, 107).

Ester Boserup makes the general statement that "*...when the size and density of population are increasing, the social system is likely to become more hierarchized and more complex...*" (Boserup, 1981, 64). Her position is largely in line with the classic conception of peasant change, as the following citation illustrates.

Thus, when higher rates of population increase begin to raise the numbers in the rural labour force, the large agricultural units offer more scope for adding employment and output to more intensive land utilisation than do the smaller units. Consequently, some of the sons of the small peasants must lose status by becoming hired workers on larger holdings... (Boserup, 1990, 53).

Gunnar Myrdal in his now classical 'Asian Drama' argues along similar lines. Population growth tends to produce a more unequal distribution of land ownership, partly through the fragmentation and subdivision of land, which tends to impoverish and dispossess part of the population (Myrdal, 1968, 1047ff).

For Boserup, differentiation is also a question of functional diversification in the form of a more elaborate labour division and occupational specialisation made possible through higher population density. In this situation, income diversification may be the local response to a demand for more specialised services and occupations as the local economy becomes more complex. While some farms become marginalised by their reliance on off-farm incomes, others may specialise in farming.

These changes are associated with the structural transformation that follow from agricultural growth and which imply a shift of labour from agriculture into non-farm sectors, a discussion we touched on in Chapter Seven

(Timmer, 1992; Mellor 1995). Following Bryceson (1997b), this process is in Africa associated with growing inequality in rural areas.

Economy and diseconomy of scale

Elaborating on the theoretical groundwork of Boserup, Rosenzweig et al conclude that among the long term effects of population growth and land scarcity are the emergence of labour markets, individual property rights in land, landlessness, purchased inputs and credits, and a corresponding decline of common property resources and horizontally extended households. With the development of individual property rights in land and a credit market based on the collateral value of land, a class of money-lenders and a class of non-owners of land will emerge. Land will tend to accumulate in the hands of persons with greater production endowments, much in line with the differentiation approach associated with market production (Rosenzweig et al, 1988).

Cain and McNicoll (1988, 104) argue that labour demand cannot keep pace with labour supply under high population growth rates, leading to declining returns to labour and higher returns to land. This process promotes concentration of land and an agrarian system of large commercial farmers and a landless proletariat.

Netting is, as always, sceptical. What is the evidence for the thesis that population growth automatically results in systematic advantages for large-scale farms? According to Netting, there are clear diseconomies in the use of hired labour that partly will offset the advantages of a specialised, large-scale production and prevent a far-reaching polarisation of land holdings. We discussed some of these diseconomies in Chapter Two under the section 'The viability of family farms'. Rosenzweig et al and Cain and McNicoll argue that large landowners will tend to increase tenancy contracts as a result of the diseconomy in using hired labour. While the distribution of land ownership tends to become more skewed as population increases, actual (operational) holdings may not (Cain and McNicoll, 1988, 104; Rosenzweig et al, 1988, 97-100). Also Myrdal observes that leasing arrangements somewhat correct inequality in land ownership, but he argues that these

cannot fully compensate for the increase in the proportion of landless people following population growth (Myrdal, 1968,1052).

In Africa, a general objection to the development of land polarisation as a result of population pressure is that land and capital markets are poorly developed, land transfers through sales are rare and restricted to within kinship groups, and accumulation opportunities through land purchase are limited. As noted by Rosenzweig et al, the development of capitalist production relations in land-scarce, high population density settings to a large extent depends on the institutional and legal framework instituted by the state (Rosenzweig et al, 1988, 100).

In most of Africa, customary tenure has hitherto remained a strong institution against land dispossession. With respect to the continuation of population growth in a situation of land shortage, social inequality, particularly in the form of generational differences in farm assets, may well grow deeper, as indicated by some of the case studies referred to in this chapter (Deere and De Janvry, 1981; Bager, 1980; and Bryceson and Jamal, 1997). It is important, however, also to recognise both the differentiation and levelling effects on inequality of unequal numbers of children born by different households. Whereas children are considered as an important means of production, making it rational for parents to defend their wealth status through larger families, this measure both slows down differentiation by the subdivision of parents' land among heirs, and increases differentiation "*...as more young adults are expelled from the land and engross the ranks of semi-proletarians and proletarians.*" (Deere and De Janvry, 1981, 341). Having said that, we must again stress what was stated earlier, namely that off-farm incomes in this situation may enlarge or reduce inequalities based on farm size. Increasingly in the peasant societies of Africa, economic inequality is less a matter of farm size alone as of a diverse mix of resources and incomes.

Summary: trends of differentiation and levelling

In this chapter we have concluded that the diversity and geographical distribution of natural resources combine with human resources to produce a pattern of economic inequality whenever such resources are scarce and subject to competition. Thus, the existence of economic stratification is an

inherent characteristic of peasant societies involved in intensive cultivation. Two main forces which, independently and in combination, tend to increase inequality over time have been discussed, one external, i.e. the market as mediated by state policies, the other internal, i.e. population growth.

According to the market driven type of differentiation, peasants producing for the market in competition are subject to cumulative processes of advantages and disadvantages, which in the long run make rich peasants akin to capitalist farmers and poor peasants approach the ranks of proletarians. This is the logical result of rich farmers' more frequent use and adoption of modern inputs and technology and of their greater propensity to withstand risks in production, hence attempts to modernise agriculture will benefit rich farmers more than poor farmers. Differentiation is also associated with the greater political power of wealthy strata, with their access to a larger social and kinship network for labour and resources, and their ability to take advantage of institutional uncertainty and negotiable social rules.

Population growth invoking shortage of land is generally held to aggravate differentiation by increasing competition for land and other resources, and by increasing the supply of a rural labour force prepared to work for wages. In addition, population growth leading to fragmentation and subdivision of holdings produces a generational kind of inequality in resources. At a certain stage, this may lead to a situation where farm size is insufficient to provide a livelihood and where household members are obliged to seek wage labour and other off-farm income sources in order to survive. How small a farm can become before becoming too small depends on a number of circumstantial factors, such as level of farm intensification, market conditions, tenure security, opportunities of off-farm work and so on.

These forces of differentiation are, however, counteracted by a number of levelling factors that may lead to the long-term preservation of the family farm as a dominant unit of production. These factors include the likelihood of an inverse relationship between area productivity and farm size caused by scale diseconomies and high transaction costs as the farm exceeds a size where the hiring of wage labour becomes necessary for its operation and reproduction. As a result, at a certain stage large landowners may lease land or diversify income sources rather than expand farm production. Actual or operational holdings, and hence incomes, may thus be less skewed than the pattern of formal land ownership suggests.

Another levelling factor is the random and systematic variation in the rate and extent of subdivision of family holdings. In most African peasant societies, the custom of land inheritance stipulates a right to land for every son as opposed to a system of primogeniture, which may consolidate land holdings across generations. The prevailing system of land inheritance in Africa is likely to have a levelling effect on differentiation, since the idea of landlessness or exclusiveness is socially unacceptable.

Just as customary land rights involving the granting of land to all male heirs may concentrate a holding in the case of a single heir, it may fragment it in the case where several siblings are to share a patrimony. When some social strata systematically produce more heirs to the land than others do, this will over time have an effect on land distribution and differentiation. It will also affect distribution of resources outside agriculture, e.g. educational level, business capital etc.

Moreover, the life cycle of a single family involves changes in labour availability and dependency that can affect farm productivity and reflect on the accumulation or dispersion of resources, so that a particular household may display different wealth at different stages in life. Such a life cycle variation in wealth, particularly in a situation of land shortage and production for the market cannot be adequately explained by the model of 'demographic differentiation' as proposed by Chayanov. Due to a great variation in individual skills, management capabilities, aspirations, and fortune, individual life cycle trajectories can be expected to radically diverge. As a result, households may experience substantial social mobility up and down the social ladder. The exact extent of mobility may vary between different contexts and needs empirical verification for each case.

One important circumstance that renders the classical thesis of differentiation problematic is the common element of off-farm incomes in the livelihoods of smallholders. Land and other farm resources are important assets but nevertheless insufficient to account for observed disparities in wealth and income. Smallholders can not only compensate falling farm incomes through off-farm employment. Off-farm work and business may in some cases even represent higher and more regular incomes than farming, especially when they are supported by a good education. A focal point of discussion is therefore to what extent off-farm incomes tally with farm assets to reinforce or weaken the existing pattern of differentiation.

In view of the factors mentioned, Netting concludes that predictions of future patterns of inequality are simply impossible, and that parents' wealth only accounts for a minor portion of the variance in children's wealth (Netting, 1993, 200-5). Needless to say, Netting's perspective on differentiation stands in stark contrast to the essentially neo-Marxist proposition that market integration tends to aggravate social inequality and in the end leads to a dissolution of the peasantry (Bernstein, 1982). Where market integration encompasses a process of 'de-agrarianisation', a similar outcome is proposed by Bryceson (1997b).

More than anything else, the question of wealth polarisation and levelling needs empirical validation. Our focus must necessarily be historical. We need to assess the inequality effects not only of market integration occurring within the shifting faces of central governments, but also of the gradual development of land shortage with population growth as the principal driving force. Only with a long-term perspective can we answer the question if increased dependence on market relations and land fragmentation appears to lead to an emerging class differentiation. The following analysis will attempt to evaluate the relative impact of some of the differentiating and levelling factors we have discussed in this chapter.

Social differentiation in Tanzania and Meru – a review and assessment

Introduction

In this chapter we will assess the overall situation of inequality and differentiation in Meru. This will serve as a basis for a discussion of the nature of inequality following the theoretical review and comparative perspectives we brought up in the previous chapter. We will start out with a brief review of the Tanzanian situation, and thereafter move over to the Meru case.

Land distribution and inequality in Tanzania

In Tanzania as a whole, where land is more readily available than in Meru, sparse population is generally assumed to be an important reason why commercialisation and development of social inequality in rural areas has remained relatively modest. Where land shortage and commercial production emerged early, however, as was the case in the northern highlands, these factors were held to aggravate social inequality. In the 1960s, Nyerere, for example, took the situation in the northern cash cropping districts as evidence of the inequality effects of agricultural capitalism combined with land shortage. According to Nyerere, inequality would turn more serious as land shortage in the future became a general problem, leading to the emergence of a farmer's class and a rural proletariat (Nyerere, 1968, 344, 407).

In a study of smallholders in Kilimanjaro, Smith concluded in 1980 that the rapid growth of population and commercial development in combina-

tion had created a class structure characterised by differences in cash income and landed property. Rapid population growth both increased land fragmentation and land accumulation, with the former process leading to the creation of a landless class in the future (Smith, 1980, 27ff, 30-3). Both Meru and Kilimanjaro, being areas of extensive settler agriculture and commercial activity, also bear evidence of the fact that in the colonial period the main pattern of differentiation was ethnically based. Since our concern here is with the smallholder society, we will not dwell on this aspect of inequality.

The view that Tanzania has a relatively egalitarian and homogenous peasantry has remained popular for many years. This view also reflects the assumed or expected results of the resettlement schemes, social reforms and communal production that were carried out under the Ujamaa ideology, or African Socialism, beginning in the mid 1960s. Ghai, for example, recognised differences in wealth between villages due to natural endowments and colonial patterns of cash cropping, but argued that within villages the peasantry showed a large degree of equality and homogeneity as a result of the Ujamaa politics (Ghai, 1984, 128ff).

In mid 1980s, however, one of the few national surveys on the topic found considerable income inequalities in rural areas, in spite of the official equity oriented politics (Collier, 1986). According to the authors, by constraining access to markets for the poorer part of the rural population, the socialist policy had aggravated inequalities and increased poverty for the rural population as a whole. Also, a World Bank study of Tanzania claims that an increase in income inequalities have taken place in the period 1969 to 1991 (World Bank, 1994b, in Havnevik, 1997 #261,201). Similarly, a number of localised studies in the past two decades have drawn attention to the fact that rural households in Tanzania face highly unequal living conditions (see for example Lindberg, 1996; Loiske, 1995; Sender and Smith, 1990; Smith, 1980).

Total agricultural area under Tanzania's more than 3.5 million smallholder households is about 4.8 million ha, of which 3.1 million ha is planted annually. In addition about 2 million ha of land (almost 30 per cent of the total agricultural area) are under some 730 large-scale commercial farms, either government-owned or private (United Republic of Tanzania, 1990, in Havnevik, 1997, 183). The large tracts of land held by parastatal, and to some extent, private companies represent an extremely skewed land distri-

bution for the country as a whole, a circumstance that is only partly alleviated by the existence of an open land frontier.

While about 80 per cent of Tanzania's smallholder households have less than 2 ha of land at their disposal and cultivate nearly all of this land, estate farms hold on average about 2,700 ha but cultivate less than a third of this acreage each year (World Bank, 1994b, in Havnevik and Skarstein, 1997, 201-2). Many large-scale farms are located in places of the best agricultural land as is, for example, the case in Arumeru District. However, also among the smallholders in Tanzania is land unequally distributed, as can be seen in Table 14.1, which is based on the result of the national Agricultural Sample Survey in 1987/88.

Havnevik and Skarstein (1997,200ff) claim that smallholder inequalities in land ownership has increased in the period between 1971/72 and 1987/88, most clearly observable in the form of an expansion of average farm size for the farm category above 10 ha¹⁵⁰. Inequality in land ownership is, however, only one important component in the overall pattern of rural inequality. As noted by Collier et al (1986), inequality in income derives not only from unequal control of assets such as land, livestock and labour, but also from differences in educational level and, to a great extent from employment and other off-farm incomes. Accumulation of wealth and wellbeing is thus closely linked to income diversification.

Table 14.1: *Smallholder land distribution in Tanzania 1987/88*

Size of holding (ha)	Number of holdings ('000)	Per cent of holdings	Total area ('000 ha)	Per cent of total area	Average area per holding (ha)
0-0.50	1 129	32.4	293	6.1	0.3
0.51-1.00	784	22.5	566	11.7	0.7
1.01-2.00	845	24.3	1 179	24.3	1.4
2.01-5.00	633	18.2	1 889	39.0	3.0
5.01-10.00	83	2.4	523	10.8	6.3
10.01-	8	0.2	390	8.1	48.8
Total	3 482	100.0	4 840	100.0	1.39

Source: (United Republic of Tanzania, 1990a, in Havnevik and Skarstein, 1997, 200-1, Tables 8.7 and 8.8).

¹⁵⁰ It should be noted that another World Bank publication of the same year, and drawing on the same sources, contradicts this observation. According to this publication, average area per holding in the category above 10 ha was 13.8 ha in 1986/87. This is a small decline from 1971/72 when the estimated area was 14.8 ha (World Bank, 1994a, Tables on p.227).

Structural adjustment and inequality

Structural adjustment and economic liberalisation, which have affected Tanzania's rural development policies since the mid 1980s, is generally held to have aggravated rural inequality and enlarged income disparities. This is partly because the austerity programs have removed or reduced public programs in health, education and welfare and introduced cost sharing of social services. According to Mung'ong'o and Loiske (1995, 176ff), the idea of communal cultivation and co-operation at the village level, which was central to Ujamaa, has given way to relations of production that are more capitalist in character. Under structural adjustment, increased privatisation and commercialisation of resources are claimed to have accentuated differentiation of the peasantry. In the affectionate words of Issa Shivji, economic liberalisation means "...*agrarian capitalism, pure and simple...*", which within a short time will produce a landless peasantry in Tanzania (Shivji, 1992, 144-5).

While the thesis of aggravated social inequality between households and regions, and between men and women as a result of macro-economic reforms may be correct in general terms, it may not be the full story. The general lack of substantive longitudinal data about the local situation before and after market reforms should be noted, as well as the methodological difficulties of relating the impact of structural adjustment to the effects of other ongoing processes (Centre for Development Research (CDR), 1995). One such example is the land alienation that takes place as a result of land shortage and competition over land invoked by population growth.

Havnevik and Hårsmar (1999,5) conclude that due to methodological problems (including different time frames, quality of data etc), no firm judgements about general trends in poverty or inequality can be drawn for Tanzania on the basis of local studies. To conclude the existence of inequality is one thing, to make assessments of long term trends is quite another. According to Havnevik and Hårsmar, it is reasonable to assume that the level of inequality has remained fairly unchanged since the mid 1980s. Participatory studies, however, have revealed that a possible majority of the rural population have experienced a decline in wellbeing due to the erosion of state delivered social services in the 1990s (ibid, 5).

A few studies report possible local positive effects of liberalisation for poor strata following increased opportunities for off-farm income. The study by Collier et al (1986), as referred to, concluded before the main thrust of structural adjustment that poverty was mainly due to poor people's lack of participation in markets. According to this study, improved access to market opportunities and off-farm incomes for the poor do not necessarily increase inequality but can have positive equity effects on income distribution (ibid, 133-4). A number of local studies and reports showing results in this direction and giving credit to the role of the dynamic informal and small-scale sector are presented by Swantz and Tripp (1996) (see also Ferreira, 1996). Booth et al. (1993) concluded that economic liberalisation had brought changes, among them improved access to basic consumer items, that were deemed positive also by poor people (see however critique by Lindberg et al., 1993).

The Meru situation

Like in most smallholder societies, there are apparent differences in resources and income among the households in Meru, as illustrated by the skewed distribution of the most important resource of all, land.¹⁵¹ The richest household quarter controls nearly two thirds of the arable land on the mountain, while the poorest quarter owns less than five per cent of the land (Table 14.2). Arrangements for obtaining additional land for cultivation through renting or borrowing are sometimes practised. Their mitigating effect on the distribution of cultivated land is not very big, however, partly since both wealthy and poor households practise them.

151 We are here concerned with inequality *within* Meru society. The most conspicuous inequality in terms of land in the area, however, is the one between Meru farmers and the estates surrounding the mountain slopes. Since most Meru consider themselves to be the rightful owners of the estate lands, which were alienated during early colonial rule, the political struggle for land reclamation has tended to obscure the fact that Meru society itself is highly stratified in terms of land.

Table 14.2: *Distribution of owned and cultivated land on Mount Meru*

Households	Land owned (%)	Land cultivated (%)
Richest 25%	62.3	55.0
Middle 50%	33.3	38.2
Poorest 25%	4.4	6.8
All	100.0	100.0

Source: author's survey

Land on the plains is even more unequally distributed than on the mountain.¹⁵² While most mountain households entirely lack such complementary plots, the most affluent households own several hundred acres each on the southern and eastern plains, and some of them have extended their land acquisition to include the frontier area in Kiteto District to the south of Arumeru District. Farming by these wealthy landowners is commercial, large scale and mechanised.

Despite the fact that land is unequally distributed, complete landlessness is rare, although perceived as a growing problem. To most people landlessness is an unthinkable fate, not only because access to land means economic security, but for emotional and social reasons. About 3 per cent of the households on the mountain lack access to land at their place of residence, while about 8 per cent live on land that is 0.2 acres or smaller. In the most land short village, Singisi, the corresponding figures are 6 per cent and 10 per cent respectively. About half the number of such 'landless' households, however, own, rent or borrow land elsewhere on the mountain or on the plains. Among the landless households, there is an overrepresentation of households headed by single men, by unmarried and divorced women, and by non-Meru immigrants, the latter category renting accommodation in the villages along the Arusha-Moshi road. Our census of 'landless' tenants in Singisi village in 1997 revealed that 30 per cent of the Meru tenants had access to land elsewhere. Among the immigrants, however, who make up 70 per cent of all tenants, only 9 per cent had access to land for cultivation

152 This concerns land owned or cultivated by mountain households. The land distribution among households resident on the plains was not investigated.

where they now were staying. No female tenants, Meru or non-Meru, reported access to land.¹⁵³

The wealth concept

Wealth can be defined in objective as well as in subjective terms. In accordance with the former, it reflects a set of measurable assets, the most important of which is land ownership. It also includes access to or control of a variety of other economic resources, including cattle, farm machinery, business capital, etc. through which cash income or subsistence requirements can be generated. In this respect education can be seen as an economic asset enabling a person to obtain an income from, for example, salaried employment.

Wealth attributes are, however, also linked to cultural and social beliefs and values. For example, the objective wealth criteria mentioned are associated with status hierarchies of age and gender. These factors influence the wealth position of a person in the eyes of other villagers, indirectly by their association of wealth with social status, and directly by tenure regulations constraining resource control for some (women) while recognising it for others (elderly men). In this sense wealth is also the means to fulfil certain material and social objectives ranked high by society, and to acquire the respect and status of fellow villagers.

Defined as '*uwezo*' (Swahili for ability or capacity) by local people, wealth can be seen as the ability to live a comfortable life, to employ people to work on one's farm, to build a modern house, to educate one's children, to marry several wives or entertain concubines, to have many children, to buy a variety of consumer goods, to participate in village politics, and so on. Wealth, or *uwezo*, is also the power to influence village decision-making in a direction that is favourable for one's own position. It is no coincidence that many well-off people are political party representatives or leaders of the formal administration, the church and other institutions.

153 Given the complex arrangements of access to land in terms of sharing with relatives, payment for labour, etc., the prevalence of absolute landlessness is probably lower than stated here. Single women, for example, many of whom rent rooms in one of the villages near Tengeru, often gain access to land through male 'patrons'.

In the following analysis we will approach the issue of differentiation through a combination of subjective wealth ranking data and objective wealth criteria. Both approaches have strengths and weaknesses. It is their combination that makes them a powerful instrument for unfolding the nature of inequality in a peasant society such as Meru.¹⁵⁴

Wealth groups

The total household sample (753 households) was classified into five wealth groups by means of an index derived from quantitative survey indicators. This index included farm assets (land size, number of dairy cows, number of coffee trees), ownership of capital goods or non-farm assets, ability to save or need to borrow money over the year (i.e. 'income security'), and educational level.¹⁵⁵ For each of the indicators households were ranked, and for each household a mean rank was calculated, being its score on the 'wealth index'. These scores were in turn divided by 753 (n) and multiplied by 100 so that the index represented values ranging from 1 (poorest) to 100 (richest).

Wealth ranking data and in-depth interviews helped validate this classification and provided information as to the qualitative content of the wealth groups, their characteristics and relation to each other. It was decided that five wealth groups would be a practical number and give a more detailed

154 A discussion of the pros and cons of the two approaches is found in the Methodology Chapter.

155 Land assets are reflected in two variables which overlap to some extent, one being land ownership on the mountain, the other being land under cultivation including lowland holdings. This is deliberate. Giving land a somewhat higher weight is motivated from the central role of land ownership in wealth formation. 'Capital goods' and non-farm assets refer to ownership of items such as bicycles, motor bikes, shops/bars, tractors/cars/trucks, town property etc. (the indicator is derived from variables A063-A068, Appendix I). The variable 'income security' is constructed from two variables (A163 and A164, Appendix I) reflecting households' ability to save money and their need to borrow cash regularly, respectively. Educational level has been included in the index on the assumption that it may serve as an indicator of income level. This is partly on the basis of the results arrived at in prior investigations, such as the one by Collier et al (1986), presented earlier in this chapter, and by Hunt (1979, 275ff), referred to in the previous chapter. According to these studies, education can be treated as an asset, which has a decisive impact on the size of incomes, particularly off-farm incomes.

account of wealth differences than the more commonly applied tripartite division of poor – middle – rich farmers. In addition, for parts of the analysis, the wealthiest group was subdivided further in order to reveal the characteristics of the uppermost household stratum. On the basis of the index mentioned, the five wealth groups were formed by means of the SPSS procedure K-Means Cluster Analysis¹⁵⁶. The resulting wealth groups and their distribution are given in Table 14.3.

Table 14.3: *Wealth groups based on wealth index (land, cows, coffee, and education)*

Wealth groups	No. of households	Per cent distribution*
Poorest	117	16.1
Middle poor	168	24.2
Middle	206	27.6
Middle wealthy	191	22.3
Wealthiest	71	9.7
Total	753	100.0

* The sample is weighted to approximate the size of the household population in the study area. This is reflected in the per cent distribution.

Below is a description of these wealth groups regarding their most significant characteristics as these were conveyed by informants during ranking exercises and complemented by household interviews and survey data. Some of the characteristics presented are given as a statistical summary in Table 14.4.

The poorest group, no. 1

In this group few households have a milking cow, and some are even without any land whatsoever. When they farm, their production is low and fluctuating and they face regular setbacks due to a number of constraints. Members of this group commonly borrow land on a seasonal basis from better off

156 In accordance with the number of groups desired, 'K-Means Cluster Analysis' arranges these groups or clusters, so that each cluster displays the largest possible difference against all other clusters as regards the mean of the variable examined. In the case referred here, five groups were asked for on the basis of the distribution of the wealth index.

relatives. The main income for most households in this group derives from off-farm sources, such as petty business, casual labour, or assistance in kind or money from relatives or friends. Many perform *kazi ya vibarua* (casual labour) on the farms of the wealthy farmers, or seek temporary jobs in Tengeru or Arusha. Earnings for household members in this group are irregular and fluctuating, and therefore difficult to estimate. Many earn less than one USD per day. Most of the landless migrants, including unmarried women, who on a more or less temporary basis rent accommodation in the villages around Tengeru Township belong to this wealth group.

The group is heterogeneous and consists of people with different backgrounds, age and marital status. It contains a number of recently married couples having inherited very small plots and with small off-farm incomes. It is also over-represented by households headed by single men and women, particularly widows, and by disabled, sick persons and drunkards. The latter categories form a destitute subcluster within this group. They live in mud houses of poor quality, sometimes out of sight from the main tracks in the villages. Their life is from hand to mouth with little planning and foresight, their children frequently drop out of school and they often go hungry. Members of this the poorest group are marginalised also socially. They rarely participate in village affairs, have a low status generally, and are frequently talked of in condescending terms by other members of society.

The Middle Poor, no 2

Most households in this group have a dairy cow and a small coffee shamba. In general, however, also in this group farm and labour resources are inadequate to provide basic needs, let alone welfare improvements. Unless they hold a small piece of land on the plains or can borrow additional land, members in this group need to supplement their meagre farm production with various kinds of off-farm activities. As a whole this group is more homogeneous than Group 1 and consists mainly of married couples.

Although the general life situation of this group is better compared to the former group, most household lacks safety margins against misfortunes. Few of them use modern inputs in farming or can afford veterinary treatment in the case a cow falls ill. Regular constraints of labour or capital pre-

vent a long lasting improvement of their situation. In the case a breadwinner falls ill or dies, a household may easily slide down to the poorest group. Under normal circumstances, however, the households in this group manage to feed themselves adequately through a variety of means and they also manage to provide for their children to finish primary school. We estimate that the daily cash earnings for the households in this group hardly exceed 3 USD per day.

Middle group, no. 3

Households in the Middle group have mountain plots of 1-1.5 acres on average and 1-2 dairy cows. They produce staple crops for subsistence on the plains or on the slopes above the coffee belt and may sell of their surplus during good years. They complement incomes from coffee and dairy farming through family based micro enterprises or employment that are more long-lasting and with better payoff than is the case for the preceding groups. Off-farm incomes in this group serve the double purpose of giving an added security against setbacks in farming *and* as a means for material life improvements. On the whole, members of this group have managed the situation of shrinking land holdings satisfactorily through a combination of land intensification and off-farm activities, and without having experienced serious declines in food security and living conditions. They may typically earn 3-6 USD per day over a year-long period. Normally, family labour is sufficient for most activities, but added labour may be hired during peak periods in farming.

Most households in this group live in small blockhouses or improved mud houses. They eat adequately and some of them can afford to educate a few of their children up to and including secondary level.

Middle wealthy, no. 4

The main difference of this group compared to the former is the size of farm assets and the larger income from off-farm sources, which make their members enjoy a relatively high standard of living. As is the case with the mem-

bers of the Middle group, farming is the backbone of their livelihood, complemented by formal employment or family businesses that require an initial capital of some size. Households in this group are market oriented farmers in the sense that they sell a large portion of their harvest and can normally afford chemical inputs and hybrid seed varieties. Most households have complementary land on the mountain or on the plains, and frequently add to these assets by renting additional land to boost farm incomes. Many of them own small herds of zebu cattle on the plains that are taken care of by an unmarried son, other relatives, or through some other arrangement. The scale of their farming requires a more regular use of hired labour than is the case for farmers in the Middle group. Interviews with households in this group suggest that their cash earnings may be within the range of 7-15 USD per day.

Household heads of this group are respected members of their communities. They are knowledgeable, sometimes well educated, participate actively in village politics and community organisations, and entertain networks that may stretch beyond the village border. They live in modern blockhouses, eat and dress well, and educate most of their children up to and including secondary level. As with the Middle groups, most households in this group consist of married couples, i.e. monogamous 'nuclear' families.

Wealthiest group, no. 5

Households of this group have large coffee shambas on the mountain and several dairy cows. They often have several plots on the mountain and use them for specialised production of coffee, cow fodder, vegetables, and so on. Some concentrate on coffee production, dairy farming, or mechanised maize cultivation on the plains. Others are prominent in all of these orientations. Farmers of this group may or may not have herds of zebu cattle on the plains, but this circumstance is of less significance for their wealth. What makes this group distinctly different from Group 4, is the scale of their operations and the capital invested in their economic activities. This is particularly so for farming on the plains where cultivation often is large-scale and mechanised. As a general rule, members of this group hire labour for farm work on a more or less permanent basis.

Within the Wealthiest group, however, there is quite a difference between the top fraction and the rest. The uppermost stratum consists of households owning and cultivating hundreds of acres on the south-eastern plains and who are extending their land acquisitions to include the frontier areas of Kiteto and other districts. Their accumulation strategy is obvious. Income generated in farming is often invested in non-agricultural sectors, such as transport, business or real estate. Within these sectors the uppermost households have found a profitable complement to farm incomes, often with sons acting as partners in extended family businesses. These households own tractors, lorries, buses, and private cars. Their educational level is far above that of ordinary people. When land is for sale in the village, members of this group, or their sons, are the main buyers. They may draw on far reaching political and economic connections. At the village level their economic and political positions influence the lives of other villagers, directly and indirectly. Jointly with the other household heads of this group, and of Group 4, these upper rank members hold the majority of formal and traditional leadership positions in the village. They are generally described as 'powerful'.

Needless to say, the uppermost members of this wealthy group enjoy a living standard far above the majority of villagers. It is difficult to estimate the average cash earnings of this group. They certainly exceed the 15 USD per day marking the upper stratum of wealth group Four. Given the living standards and the worth of the assets owned by this group, one can assume that cash incomes are well above this amount. Members of this group live in well-furnished brick or blockhouses with piped water, telephones and electricity, and with employed houseboys or housegirls. In the words of the ranking informants, the uppermost members of this group 'face no limits'. They can borrow money in the bank, they can afford treatment in private hospitals, they can travel, they have cars and good clothes, etc.



Photographs 14.1- 14.2: The homestead of a household in wealth group 1-2 is in great contrast with that of the uppermost strata of wealth group 5. In the spacious farm yard of the latter, a water tank and a truck partly covers the fully equipped modern cement house. The gap in incomes between the two categories of households is striking.



Resources and income

Survey data give further clarification to the picture conveyed by the ranking informants (Table 14.4 and 14.5). The most obvious differences between wealth groups are naturally found for the main wealth indicators (Table 14.4). The uppermost stratum has been included in the table, defined as the 3 per cent of the sampled households with the highest scores on the wealth index. The significantly higher scores on the wealth indicators by wealthier households reflect an income and production that is both larger in quantity and more diversified. Absolute figures in the Table may vary somewhat between different villages, depending on local conditions, but the overall pattern is valid throughout the mountain.

Additional economic and social indicators are given in Table 14.5. The 'household labour force' in column 'a' is the household size adjusted to the age/working ability of different household members and expressed as adult equivalents.¹⁵⁷ Access to family labour increases with wealth. The wealthiest households have on average about twice as large a family labour force as households of the poorest group. In addition, wealthy households often hire labour. In the Table this is illustrated by the 'labour hiring index' (column b), which is based on households' statements of hiring labour for a variety of tasks, including land preparation, weeding, harvesting, feeding cows, transporting crops, etc.

Wealthy households do not only have more and larger resources at their disposal. They also use their resources more efficiently, and they score higher on the indicators of farm productivity, i.e. column 'c'. Higher productivity is achieved by a greater input of labour in the different phases of cultivation, by a timely land preparation and sowing, and by a larger and more frequent application of manure and purchased inputs, including chemical fertilisers and hybrid maize seeds. In dairy farming, higher productivity is the result of better management, purchased cow fodder (dairy mill) and use of veterinary services.

157 See Chapter Twelve for a presentation.

Table 14.4: *Wealth group indicators and index*

Wealth Group	a. Mean of total land cultivated (acres)	b. Mean of land owned on the mountain (acres)	c. Mean no. of coffee trees	d. Mean no. of dairy cows	e. Education (mean years in school)	f. 'Capital goods' (mean rank 1-753)	g. 'Income security' (mean rank 1-753)	h. Mean score on wealth index (1-100)
Poorest	0.8	0.5	59	0.3	3.3	308	213	27
Poor middle	1.4	0.9	156	0.9	4.1	330	298	38
Middle	2.9	1.5	287	1.3	4.3	343	343	50
Wealthy middle	5.5	2.2	532	1.8	5.7	378	485	62
Wealthiest	10.0	4.2	830	2.7	8.8	538	600	79
Wealthiest 3 %	13.7	6.1	1059	3.6	11.8	683	627	86
Total mean	3.5	1.6	327	1.3	4.8	361	367	49

a. Land on both mountain and lowlands; b. Resident and additional plots on the mountain c. The 'standard' no. of trees per acre is 400; d. Including heifers; e. Mean years in school, primary education is 7 years; f. 'Capital goods and other assets; g. Ability to save or need to borrow money; h. Index running from 1-100, based on mean rank of indicators a-g. All between group differences are statistically significant at <0.001 level (ANOVA).

Table 14.5: Economic and social indicators, mean scores per wealth group

Wealth Group	a. Mean total labour force of household	b. Labour hiring index (1-100)	c. Farm intensification index (1-100)	d. Off-farm labour force as proportion of total (%)	e. Farm produce main income (%)	f. Casual labour main income (%)	g. Business main income (%)	h. Employment main income (%)	i. Female headed households (%)	j. Mean age of household head
Poorest	2.4	10	40	43	39	26	20	5	38	48
Poor middle	2.9	16	46	39	60	12	22	3	29	47
Middle	3.5	19	47	29	72	6	9	11	23	49
Wealthy middle	3.7	25	56	30	77	1	9	10	8	51
Wealthiest	4.5	46	65	35	68	0	11	20	4	49
Wealthiest 3 %	4.8	55	67	48	48	0	20	31	0	50
Total mean	3.3	21	50	34	65	9	14	9	22	49

a. Adjusted household size; b. Index running from 1-100, based on households' hiring of labour for a variety of farm tasks (variables A111-A127a, Appendix I); c. Index ranging from 1-100, based on households' score on one or several of the following indicators: productivity of coffee (measured as kg/tree) and milk (ltr/cow), perception of yield improvements for maize (see Chapter Twelve). The index represents a ranking of the households' mean score on these indicators, (rank/n*100); d. Percentage of household members/labour force engaged in non-farm income activities in the year preceding the survey; e. Proportion reporting sale of farm produce to be the main cash income source of the household; f. Proportion reporting casual labour to be the main cash income source of the household; g. Proportion reporting business activities to be the main cash income source of the household; h. Proportion reporting formal employment to be the main cash income source of the household; i. Proportion female headed households (widows, divorced, never married); j. Mean age of household head. All between group differences are statistically significant at 0.000 level (ANOVA), except for age and employment income. The latter variable is significant (< 0.001), however, with respect to the difference between the uppermost group and the rest.

A few further comments are in place. Note, for example, the differences between the groups in the columns depicting income from various off-farm activities (Table 14.5, columns f-h). The large proportion of households in the poorest group depending on casual labour and business should be seen against the inadequate farm resources of this group. This circumstance is further confirmed by the fact that in the poorest group about 43 per cent of the household labour force have been engaged in off-farm activities in the year preceding the survey (column d). It should be noted, though, that these figures only tell part of the story. What they do not show is that considerable differences exist between the wealth groups in capital invested, scale of business operations or type of employment. These differences account for a higher absolute income level and a proportionally higher standard of living for wealthier households.

Looking at off-farm incomes as a whole (being the sum of employment, business or casual labour), we see that the proportion of households relying on such activities as their main income source is higher for the poorest group (51 %) than for the wealthiest group (31 %). The most probable explanation is the greater significance of off-farm incomes for the poor in view of the shortage of land and other farm resources they experience.

The uppermost stratum

Of particular interest is the uppermost stratum. Households in this subgroup score higher on the wealth indicators, as expected, but not exceptionally so, at least as far as the conventional farm indicators are concerned. This being said, there is considerable underreporting regarding the size of cultivated land on the plains for some farmers in this group, as revealed by informal interviews with these farmers and by cross-checking their information with other informants. The biggest difference in the wealth indicators is found for educational level where this upper stratum clearly distinguishes itself from the majority. The perhaps most noteworthy observation, however, regarding this group of exclusively male headed households is the significance of off-farm incomes. The proportion of the household labour force that is involved in off-farm activities is at level with or possibly higher in this group than in the poorest group (48 % as compared to 43 %) (Table

14.5, column d). About one third (31 %) of the uppermost households rely on formal employment as their most important source of cash (column h). The combination of high salaried employment and large farm resources is, in fact, a more common pattern for this group than farming alone. More than 70 per cent (not in the Table) of the household heads in this uppermost group have some kind of off-farm activity (employment or business) as their main occupation. In these cases, the practical work on the farm is done by hired labour and by other household members.

Rather than having specialised in farming, the wealthiest households seem to be pluri-activists, having diversified into off-farm activities, much in accordance with the picture presented by Bryceson (1997a; 1997b) and which we discussed in the previous chapter and in Chapter Seven. In spite of large farm resources, a smaller percentage of households in this group have farming as their main income source (48 %) than is the case among the wealth strata immediately below. In the middle group, for example, nearly four out of five households have farming as their main income source (Table 14.5, column e). Those who have farming as the main income source in the wealthiest subgroup own large holdings on the plains for mechanised farming. Even so, they pursue complementary off-farm activities, which is evident from the high proportion of both household heads and members engaged in off-farm work. For half the number of households in the uppermost stratum, off-farm activities are the main sources of income (business 20 per cent and employment 31 per cent). These activities refer to well-paid employment in private or parastatal companies, or to business activities in the form of transport, tourism, gemstones and trade of consumer goods and crops.

Households in this upper stratum belong to the social, economic and political elite of the Meru, who acquired their leading positions in the 1950s and 1960s. As Christians, well educated and Western oriented they spear-headed coffee cultivation and commercial farming in the 1950s. Their sons, in turn, obtained good education and high salaried employment after independence.

What are the mechanisms and causes of the inequality pattern presented here? We will attempt to discuss this in the following chapters, beginning with the gender dimension.

The gendered dimension of wealth

Introduction

In terms of the classical controversy regarding the causes and character of social inequality, the gender aspect is insufficiently covered, if at all. Yet, one of the most apparent differences between the wealth groups lies in the disproportionate occurrence of female household heads amongst the poor strata. Female-headed households, being about a fifth of all households, are found mainly in the Middle Wealth group and below (Table 14.5, previous chapter). On average, female-headed households have fewer resources than men do and at the same time are more dependent on farm incomes than men are (Table 15.1). There are several explanations, the most important one being the 'traditional' gendered division of labour and power, and norms that tend to confine women to subsistence farming and domestic chores.

The pre-colonial social organisation in Meru was characterised by distinct age- and gender-based inequalities. The large say of elders in family formation, access to women's labour and reproduction through brideprice, the norm of polygyny implying large age differences between husband and wives, and the physical separation of the married couple following childbirth, the custom of widow inheritance and so on, underlined the different social and economic functions of men and women, as well as their different rights and obligations.¹⁵⁸

Table 15.1: Mean score on selected wealth indicators for male/female household heads.*

Sex of household head	Mean score on wealth index (1-100)	Mean size of household labour force	Size of land cultivated (acres)	Mean no. of cows	Off-farm work by head in the past year (%)	Mean years of formal education	Farm productivity index (1-100)
Males	51	3.4	3.8	1.4	42.4	5.8	52
Females	40	2.9	2.4	1.0	19.7	1.4	42

*When applying the T-test for differences between means under the assumption of SRS, it was found that recorded differences are statistically significant at < 0.01 level, except in the case of land. Applying ANOVA, all differences are significant at < 0.001 level except in the case of land, which is significant at 0.04 level.

Colonial period

While colonial rule implied opportunities for prosperity for men, this was to a much less extent the case for women. Women at large lacked real influence in village affairs through their non-representation in any traditional or modern political institution. With money being able to add to the wealth of individual family heads, men gradually increased their control over the cash flow and its sources. Access to cash was almost exclusively for men, while women continued as tenders of subsistence food crops. While women frequently sold a small surplus of the crops they cultivated for subsistence in order to buy complementary food and household items, men tended to extend their influence over such crops whenever their marketing value increased.¹⁵⁹ In addition, wage labouring and business activities were predominantly male activities.

158 For a more comprehensive background on gender values and the patriarchal system of the Meru than we are able to present here, see Liv Haram's (1999) detailed and insightful study of Meru single women with the telling title: "Women out of sight".

159 This trend has been consistent throughout the period, and beyond. It involved the marketable surplus of traditional food crops such as maize, millet and bananas, and vegetables such as onions, tomatoes and cabbage, which were sold to workers on the settler estates and in Arusha town. In Singisi, the introduction in the 1960s of new banana varieties (such as *Mshare*) with a higher marketing value resulted in men gaining control of the income generated from the sale of such bananas. Later, in the 1980s, the booming market for milk in Arusha town provides an even more striking example of male intervention in what used to be women affairs, that of managing milk for home consumption from the herd of the family.

This division of labour became more pronounced with the introduction of coffee, which gave men a firmer control not only over the cash flow, but also over the return from land planted by coffee, and indeed over land itself, its use and inheritance. In combination with an emerging shortage of land, coffee cultivation meant the replacement of the usufruct tenure right for a system that secured transfer of land to male heirs within the male descent line. As a result, women's customary right to land for food crops was eroded. At household level, the prime beneficiaries of coffee and other cash incomes were adult men and their sons. As land became scarce and more intensively cultivated, labour input increased for all household members, but more for women than for men. Now, women had to work not only in the coffee shamba but also walk or travel to distant farms on the plains where food crops were grown.

The unequal gender aspect of colonial rule is, however, perhaps most clearly seen in the case of education. Education contributed significantly to the wellbeing of men. Women, on the other hand, were largely excluded from this opportunity. While household heads gradually saw the benefit of their sons' education, daughters were mostly regarded as temporary household members predestined for marriage and a domestic role elsewhere. Towards the end of colonial rule, inequality in education between men and women was striking. Table 15.2 shows school enrolment in 1953, the year when a new and more progressive Meru administration was launched. After 1953, the general situation with respect to education improved but girls continued to lag behind. It was not until after independence that daughters attained more general access to basic education.

Table 15.2: *Primary and Middle school (Std V and VI) enrolment of Meru boys and girls in 1953.*¹⁶⁰

School enrolment	Boys	Girls
Total Primary School Std I-IV	2 333	356
Total Middle School Std V	144	30
Total Middle School Std VI	75	4

¹⁶⁰ Source: ADAR 1953, nd, TNA file 471/R.3/I. The Table builds on 22 primary schools in Meru at the time. These were run by the colonial government (2), the Native Authority (5), the Lutheran Church (13) and the Roman Catholic Church (2).

The situation during colonial rule explains much of the aggregate difference in educational level between men and women that can be seen today (Table 15.1). Since independence, education has improved considerably for both men and women. For the age group 21-30 years, the survey revealed no sexual difference in educational level for household members residing on the mountain (males: 7.7 years, females 7.6 years on average). This may indicate an attitudinal change among parents towards their daughters, the former realising that education is a valuable investment regardless of the sex of the child.¹⁶¹ For age groups 31 years and above, however, there is a gradually increasing gap with rising age in educational level between men and women.

Interpreting gender inequality

In contrast to the approach of the 'new household economics'¹⁶² depicting unitary households characterised by decision-making consensus under an altruistic male head, more recent studies have sought to understand intra-household relationships and gender aspects through concepts such as 'co-operative conflict' and members' 'bargaining power'.¹⁶³ These show that relations within a household contain elements of both cooperation and conflict and that household members' ability to negotiate decisions or control resources in their own favour depends on their respective bargaining positions. As argued by Ambreena Manji, who recently has applied these concepts to a study of female land tenure in Kagera region of Tanzania, women's bargaining position within the household has relevance for their access to and control of resources in society as a whole (Manji, 1999a; 1999b).

Manji relates women's bargaining power to their 'fall-back' position, that is the options they can rely on in the case within-household cooperation cease due to divorce, widowhood or other reasons, and to the social legitimacy of their claims. She found that women's bargaining power was strong-

161 This finding is not entirely in tune with qualitative kinds of research. Liv Haram, for example, found that parents still tend to favour their sons in terms of education (Haram, 1999, 107ff, 153ff).

162 For a discussion and critique, see for example (Ellis, 1993, 126ff).

163 One of the first to use the bargaining approach for understanding household relations was the Noble Prize winner and economist Amartya Sen (1983). For the idea of 'co-operative conflict', see Agarwal (1994).

ly linked to their control over land, and where women had managed to acquire land rights, their social and economic status had increased as a consequence. The general pattern in Kagera, however, was one in which widow's access to land was constantly threatened and challenged by their in-laws, brothers, clan elders and village leaders. Here, the combined forces of extreme land shortage and the AIDS epidemic tended to break down customary land tenure and force widows off the land. Sometimes, accusations against widows for having infected their deceased husbands with AIDS were used as a pretext for such measures (Manji, 1999a).

Izumi observes generally that economic and political reform, including a new National Land Policy, since the 1980s have contributed to intensify land conflicts in Tanzania, also between smallholders within local communities and at the family and household levels. In this process women have been losers more than men: "...*commoditisation of land and land pressure seems to have increasingly undermined women's land rights which previously were protected under customary tenure*". "...*village leaders, elders and male family members seem to be increasingly exercising their power in order to accumulate land by dispossessing women.*" (Izumi, 1999, 12-3).

The Meru case

While less affected by AIDS than the Kagera region, similar processes can be seen at work also in Meru, albeit at a smaller scale due to a possibly stronger respect for customary tenure on the mountain. Land disputes are steadily increasing, however. Where such disputes involve daughters or widows who claim access rights to land, they often result in that women have to choose between subordination and conflict. The latter option bears a high risk of social marginalisation and economic destitution.

While at the same time observing that women's rights to land have been eroded with emerging land shortage, it should be noted that customary tenure in Meru grants the right for a widow to remain on the land in order to provide for herself and her children. Access to land is, however, conditional. Widowhood means being under the supervision and control of the in-laws or grown-up sons. There are mainly two types of female-headed households. The first type is elderly widows, who dominate among female household

heads that are 50 or 60 years of age or older. Here, small resources partly reflect old age, reduced working capacity and dependence on remittances from grown up children. Old widows are the last representatives of a household being at the end of the life cycle and where most resources have been divided to heirs. In the Meru tradition it is the youngest son who is responsible for the wellbeing of his parents and mother.

The other type of female-headed households, and where one can see a clear discriminatory pattern, consists of younger widows with small children, and of divorced and never-married women. While these widows may 'possess' land of some size, it should be noted that their economic freedom as land managers are circumscribed by male in-laws who act as guardians of the land or 'family caretakers' until sons/heirs are old enough to inherit.

In the 'old days' of polygamy, in the case the widow was still in her reproductive years and able to produce heirs to the land and to the male lineage, she became the additional wife of the husband's brother. 'Widow inheritance' nowadays rarely occurs in the form of formal marriage. Instead, a nephew or a father-in-law becomes a 'care taker' and a 'guardian' of the land and the heirs. However, in practice this is a difference in form rather than content. We found that caretakers frequently took on the role as 'lovers' or informal husbands, a finding that is confirmed by Haram (1999, 40).

Unable to remarry outside the husband's lineage, widows are often pressurised to accept social and economic conditions defined by the male lineage in order to stay with the land and provide for their children (see also Haram, 1999). This was, for example, the case for one of the widows with whom we conducted several interviews. This particular widow was well educated and in other respects showed a preference for Western attitudes and lifestyle. However, since the resources at stake were large and could offer her and the children a comfortable life she felt obliged to comply with tradition. In general, the bargaining power and 'fall-back' position of young widows with small children, and particularly without sons, is small. Also, the social legitimacy of claims that go against the interest of the male lineage is low.

While clan elders in a number of land conflicts in Singisi and other villages were seen defending widows' rights against sons or in-laws, the situation for young widows without heirs is generally troublesome. In a recent case, a father and clan elder negotiated to have a younger son marry his newly widowed daughter-in-law in order to keep the land and the property

within the lineage. The widow, in spite of having only small daughters, refused and claimed to be the rightful owner and inheritor of the land, and also to be the legal benefactor of the husband's pension she was entitled to through his employment in the government administration. The widow was supported by her father, also a clan elder. The case, although unresolved by the time fieldwork ended in 1998, illustrates not only the weak position of widows within the customary system, particularly when they lack heirs to the land. It also shows the present shortcomings and ambivalence among clan elders about how to act at a time when the customary system clashes with modern legislation, when not all women marry and women bring forward demands for gender equality.

It appears logical that conflicts involving the rights for women to reside on the land are on the increase, as are other causes of land conflicts in the situation of severe land shortage. The fact that widows receive some support for their claims from clan elders does not contradict the observation that the number of attempts by in-laws to get hold of the land appears to be on the increase, although statistical records on this topic are lacking. It is not uncommon that widows are harassed and in subtle ways pressurised to leave their homestead, or that sons maltreat even their mothers in order to have the land passed on to them.

It is important to note, however, that not all conflicts over land involving widows, mothers and daughters as 'victims', are caused by the land hunger of brothers and in-laws. Land conflicts also stem from the fact that women nowadays increasingly tend to challenge the institution of 'widow inheritance' and the social legitimacy of male superiority in property inheritance and land matters. Improved education and awareness of legal rights, more income earning opportunities for women and the increased need for households to rely on wives' cash income in a situation of severe land shortage, are among the factors that have made women less prone to accept unfair treatment, and hence are leading to an increase in the number of conflicts concerning their rights to a fair share of the household income, land and other property.

Adaptations within customary tenure

In the 'old days' when land was sufficient, marriage universal and women confined to producing the food needs of the family, and few livelihood alternatives existed, customary tenure was no problem. Today, regulations that previously served to protect women are constantly violated by men who themselves have to compete for land. At the same time, more and more women refuse to accept the inferior role ascribed to them by tradition. Land shortage, commercialisation, external land 'investors' and modern legislation all challenge customary tenure. In the Meru Clan Council known as 'Mringaringa' and formed in the 1950s to fight colonial land policies and boost social development, policies regarding land conflicts are constantly debated. In the Declarations regarding Customary Law made during clan meetings in 1985 and again in 1989, clan elders acknowledged the right for daughters to inherit land and incorporated these rules as amendments into the written constitution of the Meru.¹⁶⁴

These revisions were decided in order to handle the conflicts that followed from the increased incidence of divorced and never-married (single) women. Unmarried daughters have a much weaker bargaining power regarding landed resources than do widows. In the Customary Law of the Meru, it is stated that once land is given to a daughter, nobody has the right to take away such land since *all children are equal* (our italics).¹⁶⁵ What is evident, however, is that the social legitimacy of female land inheritance, as recognised by the Clan Council, is much lower among the Meru in general, which was also noted by Haram (1997, 171ff). In reality, very few women own or control land in the sense that they can decide independently about its use. The number of female *landowners* is small and probably does not exceed 100 cases in the mountain area as a whole.¹⁶⁶ This should be compared

164 See 'Declarations of Meru Traditional Clan Elders' Council', Third Revision, 1985 (Maazimio ya Kikao cha Washili wa Mila za Wameru, Awamu ya Tatu, 1985), paragraph 57, and Forth Revision (Awamu ya Nne), 1989, paragraphs 25 and 36. Documents at the courtesy of Mringaringa Chairman, Mzee Bethuel Kaaya.

165 'Declarations of Meru Traditional Clan Elders' Council', Forth Revision, 1989, paragraph 36 i. Translations from Swahili by Mr Roy Kaaya.

166 The sample contained 13 cases of divorced or single women households. Of these, seven held land that had been either purchased (1) or inherited (6). Weighing the sample to approximate the population size gives a total estimate of 97 cases of female land ownership/inheritance on the mountain.

with the large estimated number (1,050) of unmarried (65 %) or divorced daughters (35 %) above 26 years of age who live with their parents but without rights to the land and under the constant threat of being chased away by brothers.¹⁶⁷ Nearly two thirds (64 %) of these women have children who have no right to inherit land from their grandparents but who must seek land at their father's place according to tradition.

When daughters do get land, their freedom as landowners is more circumscribed than for sons. Female land inheritance is intended to offer a temporary means of security for unmarried daughters. For fathers, it is voluntary and not compulsory to grant such land to daughters. As stated by the clan elders in the declaration, daughters who are already married have no right to claim land from their fathers. Not only do daughters inherit much smaller plots than sons do. They have no right to transfer land to their children or to keep the land if they decide to marry. As can be shown in several cases where daughters have inherited land, brothers constantly challenge their position, and especially after the death of a father, harassment may cause them to leave the land altogether. Clan elders intervene to protect daughters against abuse by brothers but only to a limited extent and only when the land transfer involved their advice in the first place.

Unable in most cases to obtain land and facing poor tenure security when they do, most unmarried daughters and divorced women have a weak 'fall-back' position. At the death of their parents, or before, they often feel obliged to leave their homesteads and home villages unless outright chased away. Many end up in Arusha town, trying to make a livelihood in the informal sector. Some rent accommodations in Tengeru Township or in the villages near the main road. A few women have managed to get a good income in the formal or informal sector, even to the extent that they have bought land or a household plot. The majority, however, are poorly educated and eke out a living from petty business or casual labour that provides little surplus or long term security, yet represents a better option than staying at home with relatives or in-laws.¹⁶⁸

167 Sample occurrence was 91, which when weighed to approximate the population total resulted in 1,050 women above 26 years of age living with their parents in 1995. Estimated mean age at marriage (Singulate Mean Age of Marriage) was taken as dividing point. For women it is 25.9 years (calculated according to UN Manual X, 225).

The number of single women households relying on petty business seems to be increasing, which was also noted by Haram (1999, 138ff). Both push factors (women being chased away) and pull factors (women seeking an independent income) seem to be operating. Interviews with these women reveal that the increase in income opportunities that have followed from economic liberalisation have made it possible for a larger number of them to make a living independently of husbands and in-laws. Many such women seek land for complementary subsistence cultivation. Sometimes they succeed in borrowing or renting land from relatives or friends. As also observed by Haram, they may obtain a piece of land or other material support from men with whom they hold temporary relationships as 'second wives' (ibid, 176ff). Needless to say, the security of such tenure arrangements is weak and dependent on the relationship from which it stems.

It remains a fact that women at large are being discriminated against as far as access to and control of resources, including land, water, agricultural inputs, education and income are concerned. Female-headed households have on average a lower income and education than male headed households. They more often face shortages of food and clothing, lack school fees for their children, and experience bottlenecks in terms of labour or farm inputs, leading to a lower productivity and to more frequent cases of deteriorating soils and crop yields. What we found is largely in line with Haram's recent study on women in Meru. The role ascribed to a woman by society is still mainly one of a wife, mother and domestic worker. The security and wellbeing of women are in various ways linked to male domination. Women who seek a different role have to struggle against a male dominated society in which neither tenure rules nor social norms and values recognise them as independent landowners, income earners or decision-makers. There are indications that changes are occurring within these fields, however. For example, observations that women more often than before give a voice to unfair treatment or detach themselves from marriage relationships, and that parents to a much larger extent than before are willing to invest in education for their daughters, indicate that traditional patriarchal values are at odds with today's reality.

168 Liv Haram's study provides a detailed and insightful account of the plight and struggle of single women in a male dominated society facing rapid social and economic change (Haram, 1999, 138ff).

The correlation (Pearson's 'r') between the wealth index and sex is -0.28 meaning that gender has some but not a very strong relation to the overall distribution of wealth. The gender related inequality is most obvious in the case of education (-0.42), which reflects the considerably lower average educational level of women. One consequence of lower education among women heads is that they less frequently than men seek off-farm incomes, as we noted in Chapter Eleven. When they do, they have to make do with low-income and local options.

Gender inequalities, measured as correlations between sex and the wealth index, are more pronounced for elderly respondents (-0.39) than for younger (-0.15). In the latter case, improved education and more frequent off-farm incomes appear to have partly offset the impact of some of the most obvious inequalities regarding conventional farm resources, education and off-farm incomes seen for the elderly women.

When looking at the size of total land cultivated, the correlation between sex and land is negligible (-0.10), which at first glance may seem surprising. Also in this case, what difference exists between the sexes is concentrated to the elderly respondents (-0.20) while the difference among younger ones is negligible (-0.04). We should not interpret these weak correlations to mean that gender differences are negligible, however.

In the case of farm resources, for example, we must distinguish between *access to* resources, as is reflected in 'size of cultivated land', and *control of* resources. While most young widows (75 %) are able to keep the cash income generated from the land or animals, only one in five (19 %) feel they can make independent decisions regarding the farm or the land, for example concerning sale or purchase of cows or change of land use, and less than one in six (15 %) feel they have a say in the distribution of land to heirs. In most of these cases, the consent of the in-laws, particularly that of the brothers of the deceased husband has to be obtained. In reality men control the land cultivated by women. Convention and tradition to a large extent still confine women to the domestic sphere, although no longer as self-evident and unquestioned as it did only a few decades ago.

Finally, in spite of a clear gender dimension in wealth, we must note that female-headed households are represented in all wealth groups. A substantial variation in wealth exists among households, irrespective of whether

headed by men or by women. We will now turn to some of the factors that act to produce inequality independent of the sex of the household head.

Age related inequality – the impact of population growth and life cycle factors

Introduction

The idea of age related inequality links up with a central institution in Meru, that of the age-set or age-grade (*rika*). In precolonial times, male members of the same age class shared an ideology of equality and were equals in the sense that nobody could escape the obligations that were associated with that group. The age-set organisation ascribed to different age groups different rights and obligations regarding the control of material assets that rendered inequality a distinct age dimension. Ritual ceremonies marked the changing status of age group members, as they grew from young boys to warriors and to elderly respected men and in the process accumulated wealth.¹⁶⁹ Consequently, while men within age-sets were relatively equal, men of different age-sets could display considerable differences in wealth (e.g. cattle). This rendered inequality a life cycle dimension, with wealth increasing as a man travelled through its different phases.

169 A man proceeded through the inferior status of *iseka* (uncircumsised boy) to *nsero* (circumsised man, a soldier or *morán*) to *nsuru* (respected man of age, one who has ‘slept’, meaning he is no longer obliged to perform hard physical labour or warfare). The most important passage was the one between boyhood and adulthood, which included circumcision and the subsequent seclusion of teenage boys from society for several months. This passage ended with celebrations all over society and with the boys acquiring status as adult men and warriors with their own age group name.

Through opportunities for education and incomes from wage work, colonial rule had a deteriorating effect on the age-set system leading to the gradual emancipation of youth from the control of elders.¹⁷⁰ During early colonial rule, family heads sent young men to earn cash on their behalf. Slowly, however, young men took advantage of new options and accumulated wealth on their own. This trend was particularly strong in the case of young Christian converts. While retaining respect for some traditional institutions, they distanced themselves in regard of several other central customs, including the ones related to circumcision, drinking of alcohol and polygamy.

The erosion of the-age set or age-grade system has continued in the post-independence period. Today, many age-grade members escape the initiation ceremonies and in other ways distance themselves from its obligations and prescriptions. The age-grade institution is not entirely without significance, however. Its leaders are respected and consulted on issues dealing with members' (mis)conduct, and it serves as an important divider of labour, for example, when village members are mobilised by the formal administration for communal labour, e.g. road maintenance, digging of irrigation channels etc. In addition, the age-grade system serves as an important point of classification and reference by the Meru. In this case, a number of individual characteristics are associated with a certain age group, i.e. approximate age, wealth and status attributes, position in the life cycle, expected behaviour etc.

Analysing age related inequality

Based on this brief historical orientation, we can see that wealth and inequality relates to age through a partly institutionalised pattern that at the individual level corresponds to different life cycle positions. We cannot, however, expect such a pattern to be automatically replicated over time. It is likely to change under the impact of several factors, among them the ones we exemplified in the paragraphs above. Moreover, in a situation where the

170 In a report from Nkoaranga Mission in 1935, Rev. E. Ittameier (1935) noted the eroding effect of money on the authority of fathers. See also comments by Hans Cory (nd) on the lack of appeal of the age-set system among educated youth in Meru.

prevailing land tenure grants a piece of land to every male heir and where additional land is not available and outmigration limited, growth of population inevitably creates subdivision and fragmentation of holdings. As we argued in Chapter Thirteen, a growing shortage of land in this situation produces increasingly unequal conditions of wealth replication for subsequent generations, at least as long as we talk about wealth in terms of land assets.

As a consequence, younger landowners will inherit smaller farms than the older ones did before them. At the same time, however, land holdings and wealth can be expected to vary over the life span of a household in accordance with the changing labour capacity and consumption demands of individual household members, i.e. accumulation at first, thereafter consolidation and, eventually, a need to divide land and resources as heirs reach marriage age.

The subdivision of holdings

Our enquiry into the history of the most numerous clan (the Kitomari) in the village most affected by population pressure in Meru (Singisi), illuminates the fragmentation effect of land inheritance under population pressure. For every generational shift of the Kitomari clan in Singisi, the number of heirs sharing the land has about tripled (Table 16.1).¹⁷¹ Our enquiry revealed that all Kitomari households stem from three brothers of the Marishari age set who settled in the area after having fled an outbreak of smallpox in their home village Ndoombo in the 1870s or 1880s. The three brothers gave rise to eleven sons of adult age who all cleared virgin land in different parts of the village around the time of the German arrival. These sons in turn produced 37 adult sons, of whom 35 remained in the village. By then, all land in the village had come under permanent cultivation (around 1930).

In the next generation again, being the great grandsons of the three ancestral brothers, the number of adult male offspring had increased to 146 of whom 119 remained in the village (around 1960). Four generations after

171 We mapped the family and generational histories of the three most numerous clans in Singisi village; the Kitomari, the Akyoo and the Kyungai. They all show a similar pattern in the growth rates of heirs.

the original brothers we have approached present time. The number of adult male descendants of the 119 is now 304, of whom 299 either live in the village or hold land there. Most of these are still in their reproductive years and not all of them are yet married. Some of them may eventually decide to settle elsewhere. The majority, however, are likely to remain in the village and claim a portion of a shrinking land heritage. As it is, the next generation will number about 900 male descendants beginning to claim a portion of their family patrimony some ten to fifteen years from now.

Table 16.1: *Growth of the Kitomari clan in Singisi village over 5 generations*

Generation	Time period	No. of heirs/households
1 st gen. settlers	≈1870-	3
2 nd gen. heirs	≈1900-	11
3 rd gen. heirs	≈1930-	35
4 th gen. heirs	≈1960-	119
5 th gen. heirs	≈1990-	299

Table 16.2 gives another indication of the rate of land fragmentation since the 1930s, now for the whole of Meru, based on statements by household heads on the size of their homestead plot at the time it was inherited (which is equivalent to their year of marriage). Household heads have been classified into age groups based on the Meru age-sets, representing age intervals of 10-15 years on average (Table 16.3). The Table shows that the average size of land that surrounds a homestead has steadily declined over the years under the pressure of a growing population.

Table 16.2: *Rate of land fragmentation as indicated by the mean reported size of the homestead plot (in acres) per age set and mean year when inherited (year of marriage), all households*

Age group of household head	Mean year when inherited (married)	Mean size of resident plot (acres)
Kakisha	1991	0.5
Ultalala	1981	1.0
Seuri	1964	1.4
Sitimu	1952	1.7
Kisali	1941	2.5

Between group differences significant at 0.01 level or below (One-way Anova).

Table 16.3: *Mean age of now living household heads of different irika or age groups.*

Age groups	Mean age (years)
Kakisha	30.3
Utalala	40.8
Seuri	56.4
Sitimu	67.9
Kisali	77.2

Farm size, land fragmentation and wealth.

The correlation (Pearson's 'r') between the age of the household head and the *acquired* size of the *resident plot* is 0.49, implying that land fragmentation over time has caused a substantial reduction in the amount of farm resources available to households. Excluding women from the sample and looking solely at male household heads, who are the recipients of land inherited, does not alter this relationship (in this case the correlation is 0.45). This means that population pressure is a significantly contributing factor to intergenerational differences in land ownership and farm resources, at least as long as we limit our observation to the size of the farm at the time of respondents' marriage.

When we look at the *current* size of the farm, however, the picture is somewhat different. Correlation between age and the *current size of the resident plot* is 0.26 (for male headed households 0.29). In the same way, total land *currently under cultivation* has a correlation with age of only 0.16 (for male headed households it is 0.23).

Of the individual wealth indicators, the highest correlation with age is found for education, -0.64 (for male-headed households -0.57). Here, the general primary school enrolment after independence provides the main explanation, thanks to which younger household heads are better educated than older ones. The total wealth index, however, has a correlation with age that is much less, i.e. 0.10 (for male-headed households 0.24). In other words, age accounts for less than 5 per cent of the total variance in the wealth index (male headed households).

Why is the correlation between age and *current* wealth/farm size so low in spite of the fact that households of different age, on average, have very

unequal *initial* land resources at their disposal? Apparently, the size of resident plot at marriage is not a very good indicator of the wealth position and land assets of a household today. One reason is that the cyclical character of household assets over a life period tends to reduce the impact of age when analysed under the assumption of linear association. Age and farm resources do relate to each other. However, they do so in a non-linear fashion that implies phases of accumulation (young households) as well as dispersion of resources (old households), the effects of which are that both young and old households tend to have fewer resources than those of middle age. We will deal with this aspect in some more detail in the next section.

The changing content of the wealth concept

The better education and more frequent off-farm incomes among young strata may to some extent compensate for their relative shortage of land. Farm intensification may have a similar effect in so far it is practised more frequently by young households than by old ones. Over the years, decisive wealth criteria have shifted from cattle to land, and more recently from land to off-farm incomes, partly as an effect of the land fragmentation process. The effects of population growth on the gradual reduction in farm size and a subsequent generational inequality in land ownership are unquestionable. To an extent, however, the difference in intergenerational ownership of land have been 'cushioned' through the better education, more efficient land use and larger reliance on off-farm incomes by younger households. In addition, old households with large holdings at the outset are now in a state of dividing land and other resources.

Life cycle related differentiation

If wealth distribution was an effect of life cycle factors alone, both young and old households would have been exclusively found in the lower wealth groups and middle age households with grown-up not yet married children in the wealthiest group. And if wealth were independent of the life cycle, wealth groups would be lacking a distinct pattern with respect to age. Need-

less to say, neither of these situations are the case. The question is rather how much the real situation diverges from either of these theoretical or hypothetical situations. Our point of departure is, how much of our observed wealth distribution can be explained in terms of life cycle related factors? And, how much of the life cycle effect is due to typical Chayanovian demographic determinants, i.e. 'demographic differentiation'?

On the assumption that the age groups represent households in different phases of the life cycle, Table 16.4 quite clearly demonstrates the simultaneous occurrence of life cycle factors and other factors accounting for the wealth distribution among smallholders in Meru.¹⁷² For every age group, each representing a position in the life cycle, there is a substantial variation in wealth. At the same time, wealth is clearly linked to the life cycle, which can be most easily observed in the poorest and richest wealth groups (1 & 2 versus 3 & 4), whose distributions mirror each other. Most young (Kakisha) and old households (Kisali) are located in wealth groups 1 & 2, while middle aged households (Seuri) are found primarily in wealth groups 3-5.

Table 16.4: *Wealth groups by age groups. Rows in per cent of respondents*

Age group	Wealth groups:					Total
	Poorest	Middle poor	Middle	Middle wealthy	Wealthiest	
Kakisha	21	38	23	16	2	100.0 (120)
Ultalala	13	20	26	26	14	100.0 (301)
Seuri	13	18	34	23	13	100.0 (143)
Sitimu	16	26	28	25	6	100.0 (118)
Kisali	30	29	27	11	3	100.0 (54)
Total	16	24	28	22	10	100.0 (736)

* Total cases 753, missing 17.

Also, the distribution of mean cultivated area and wealth position shows a distinctive life cycle pattern (Table 16.5). The distribution of cultivated land is skewed in favour of the elderly age groups due to the greater per capita availability of land at the time when households of these groups started

172 In the analysis a small number of households (11) headed by divorced and single women (not yet married) have been excluded since these cannot be classified with respect to *rika* or land. Five polygamous widows of the Ultareto age set have been transferred to the Kisali group.

their life cycle trajectories. Nevertheless, one can observe how both cultivated land and wealth first increases and thereafter decreases with growing age in what can be described as an inverted 'U' shaped fashion.

Table 16.5: *Mean cultivated area and mean wealth position by age group*

Age group	Mean village cultivation (acres)	Mean total cultivation (acres)*	Mean wealth group position**	Mean rank on wealth index (1-100)
Kakisha	1.1	1.6	2.4	43
Ultalala	1.9	3.3	3.1	52
Seuri	2.4	4.0	3.0	51
Sitimu	2.5	5.2	2.8	47
Kisali	2.0	3.1	2.3	41
Total mean	2.0	3.4	2.9	49

*Includes lowland cultivation. ** This is an ordinal variable, here treated as a scale variable. Total cases 753, missing 50. Differences are significant at <0.01 level (ANOVA).

We will now look for further evidence of the impact of the life cycle, first by examining the pattern for expansion and contraction of farmland, and the size of the farm, and second for some specific resource and labour indicators. The household life cycle in Meru normally begins with a son inheriting a piece of land upon marriage and ends with an elderly widow remaining with a small piece of land for subsistence. In the interim, land and other resources are first accumulated and thereafter dispersed as heirs reach marriage age.

Expansion and contraction of land

For each of the age groups, we will first look at changes in the mean size of the mountain resident plot, and thereafter at the proportions of households in the respective age groups that have increased and decreased the size of their farms. In the latter case we include lowland cultivation. With the land frontier closed, expansion and contraction of farm size is a matter of redistributing existing land, mainly through inheritance transfers and from borrowing and renting arrangements and, to a minor extent, from sales and purchases.

Current holdings or size of cultivation by households are the combined result of three factors: land inherited at the outset (1), land accumulated (2)

and land parted (3). Accumulation is land purchased by the household, or borrowed or rented from friends or relatives. Partition is land sold or given to heirs or temporarily parted in arrangements of lending or renting. It is hypothesised that changes in the size of the resident plot indicate a general propensity by households to accumulate or part with resources depending on their life cycle position. We control for land fragmentation (population growth) by looking at the situation for each of the age groups in turn. In Table 16.6, the strategy of accumulation and partitioning/contraction is expressed as a ratio between the current and outset size of the resident plot (column 'c.').¹⁷³ We observe that this ratio is highest for the Ultalala and Seuri age sets, and lowest for the Kisali.

Table 16.6: *Lifetime changes in the mean size of mountain resident plot (acres) per age set*

Age set	a. Meansize of resident plot at outset (acres)	b. Meansize of resident plot at present (acres)	c. Land accu- mulation/ contraction ratio (b/a)	d. Proportion renting or borrowing land (%)	e. Proportion having purchased land (%)	f. Proportion having parted land on mountain (%)
Kakisha	0.5	0.5	1.0	23.8	6.0	0.0
Ultalala	1.0	1.0	1.2	22.3	17.6	3.7
Seuri	1.4	1.4	1.2	20.8	33.1	29.3
Sitimu	1.7	1.3	0.9	8.2	35.4	62.8
Kisali	2.5	1.2	0.6	5.5	22.7	82.6
All	1.2	1.1	1.1	18.4	22.1	24.0

Total cases 753, missing 26-34. Between group differences are significant at 0.01 level or below (ANOVA).

Complementary to this ratio is information about the proportion of households from each age group that have increased (column 'd.' and 'e.') or decreased (column 'f.') their farms. Column 'd.' refers only to land that at the time of the survey were cultivated on terms of lease or borrowing. Such arrangements offer flexibility with respect to the shifting consumption needs of households and can be practised by those who lack the means to buy land. Column 'e.' on the other hand, refers to the proportion of households who at any time have purchased land they now cultivate. Figures are surprisingly

¹⁷³ It should be noted that changes in the size of the resident plot are only a rough indicator of how the life cycle affects land ownership or total cultivation. Expansion and contraction of land involve land in other places as well. The selection of the resident plot is partly determined by the character of survey data.

high in view of current high land prices on the mountain. However, they include lowland plots where prices are lower and refer to an indefinite period in the households' past while figures in column 'd.' refer to the current year. In addition, included are land transfers that involve exchange of plots, for example between the mountain and lowlands. Such exchanges are the main reason for land partition among the Ultalala age group (column 'f.'). In most other cases, however, a decrease of farm size imply land transfers to heirs.

Kakisha and Ultalala households are presently in life cycle phases where they expand or consolidate their family size. They accumulate land through renting and borrowing arrangements and, when they can afford to, through purchase, particularly as regards lowland holdings (column 'd.' and 'e.'). Also Seuri households expand their cultivation through renting and borrowing. The Seuri group differs from the former two by having a larger proportion of households with purchased land holdings (33.1 %). While most Seuri farmers will maintain or expand their economic performance for some years still, nearly a third of them have entered a stage (1996) where they part land to their Kakisha sons (column 'f.').

Above a certain age, here approximated by the mean age of the Seuri group, the propensity to accumulate decreases with growing age, as expected. The Sitimu and Kisali groups have accumulation ratios less than one, indicating that they possess less land now than they did at the outset. Another indicator of a shrinking farm size that takes into account all land holdings is the proportion of households which has parted land (column 'f.'). We see that this proportion increases rapidly with growing age. Being at the end of the life cycle, the Kisali group is to a great extent made up of widows (73 %) and is in a state of rapid land partitioning.

The above presentation gives evidence to the existence of a life cycle related behaviour as regards expansion and contraction of farm size. The question is if it is linked to typical Chayanovian determinants, such as family size and dependency ratio, or is influenced by other factors?

Subsistence and market oriented consumption

In a subsistence economy with land abundance, it is aggregate household consumption needs that determine total farm size, according to Chayanov's model. The c/w ratio denotes the labour input required per able worker for maintaining a given level of household consumption. The c/w ratio varies as the relative proportion of able workers and dependants changes in the course of a household's life span. Alternatively, one can say that the c/w ratio expresses the household consumption level that is possible at a given level of labour input by able household members. When the number of consumers and dependants increases in a household, members can either intensify labour or reduce per capita consumption. Where access to land is flexible, the first option implies expansion of cultivated area totally and per worker, and the second option a constant or reduced farm size.

Where access to land is limited, as in Meru, households can be expected to respond only partly through the land size option. Alternatively, they may increase cropping intensity in a Boserupian fashion, totally and per worker, with rising area productivity as a result. If they choose not to, and no other source of income is available, they are bound to reduce their per capita consumption.

It is not clear from Chayanov's model what may cause households to choose between labour intensification and reduced consumption. Labour intensification or reduced consumption may reflect a shifting capacity by households to apply labour in farming. This capacity can be expected to vary over the life cycle. Households with exceptionally high c/w ratios (i.e. a large number of children or ageing household members), for example, may be forced to accept a reduction in per capita consumption.

In a subsistence economy, consumption levels can be assumed to be inelastic and the actual reduction in consumption caused by high c/w ratios is probably relatively modest. Where production for the market occurs, however, and when off-farm incomes play a significant role in households' livelihoods, one can expect consumption to be influenced by a number of additional factors, some individual and some circumstantial, and variations in consumer level between different households to become more pronounced. Personal welfare aspirations and skills, terms of market exchange, availability of consumer goods, educational level, income levels and opportunities,

and so on, are examples of factors that are likely to increase the elasticity of consumption/demand and provide incentives for intensification of labour beyond subsistence requirements. Labour intensification in this situation does not only mean increased area productivity in land scarce settings, but the drawing on income from off-farm sources as well. As a consequence, differences in consumption level can be expected not only between households of different age and phase of the life cycle in accordance with Chayanov's model but also between households of similar age and demographic composition.

The Meru smallholder economy is part subsistence, part market oriented. The extent to which the observed generational pattern of farm size/wealth, and of land accumulation and contraction, is influenced by the classical 'determinants' of the Chayanovian subsistence model (number of consumers and consumer/worker ratios) is an empirical question to which we now turn. The examination is based on some simplified assumptions concerning the nature of the household. For example, both labour force and consumers are expressed as adult equivalents where we make no difference between men and women as to their respective labour capacity or consumption level.¹⁷⁴ Furthermore, we assume the household to be a unit of altruism and solidarity into which all members pool their individual resources.

Linking household size and c/w ratio to farm size, wealth and expansion and contraction of land.

Table 16.7 shows that the 'household labour force' and the 'number of consumers' of the different age groups follow a distinct life cycle or '∩' shaped pattern with Seuri households displaying the highest figures on both indicators. The consumer/worker (c/w) ratio, or dependency ratio, also seems to relate to the life cycle in a roughly 'U' shaped manner. Young and old age groups display the highest mean ratios, i.e. have a larger number of dependants relative to able workers than do middle age groups. Note, however, that

174 Number of consumers is expressed as adult equivalents. The consumption of children 0-6 years of age is assumed to be half that of adults, or 0.5. For children 7-14 years and for adults above 75 years of age, the corresponding figure is 0.8. Household members of 15-74 years are each 1.0 consumers. Women and men are assumed to have equal consumption.

the Kakisha group somewhat departs from this pattern by having a lower than expected c/w ratio. Seuri households at the bottom of the 'U' are composed of mainly grown up members with few dependants and possess a larger than average labour capacity that can be used either for leisure or for productive purposes, including land accumulation. From a subsistence point of view, Seuri household members have less reason to increase their labour input than do able members of both younger and older households (Table 16.7). In a situation where consumption demands are influenced by the market, however, they may do just that with increased per capita consumption/wealth as a result.

Table 16.7: Household demographic determinants by age group.

Age group	Mean labour force	Mean no. of consumers	c/w ratio
Kakisha	2.2	3.0	1.4
Ultalala	3.2	4.9	1.6
Seuri	5.1	6.2	1.2
Sitimu	3.2	4.2	1.5
Kisali	1.8	3.0	2.0

Between group differences significant at 0.01 level or below (ANOVA).

Since in the Meru case, land is partly used for subsistence production, it sounds reasonable to expect some trace of a Chayanovian demographic differentiation. On the other hand, market integration has for a long time influenced Meru livelihoods. On this basis, one can expect consumption demands to be elastic and that the absolute size of the household labour force rather than the number of consumers influences the ability of a household to realise aspirations of consumption and improvements in standards of living. Also important in this situation, however, is the c/w ratio, since it indicates to what extent the labour force in a market situation is 'free' to generate a surplus (for further consumption or investment).

First, we will examine the relationship between, on the one hand, the size of the household labour force, the number of consumers and the c/w ratio and, on the other, farm size, wealth and tendencies of land accumulation and partitioning. Thereafter, we will look at the impact of these household demographic characteristics on the propensity by households to hire in labour, work off-farm and intensify agriculture.

The land option: farm size and land accumulation/ partitioning

A noteworthy observation when combining Table 16.7 with Tables 16.5 and 16.6 is that an equal labour force (and near equal c/w ratios and consumer numbers) are found for age groups with quite different average sizes of cultivated land (Ultalala and Sitimu age groups, Table 16.5). In the same way, Seuri households having the largest average number of consumers and labour force do not have the largest farms. These observations look as clear diversions from the Chayanovian model in which consumer number determines farm size. We must keep in mind, though, that farm size in this case is not flexible due to the closure of the land frontier. Farm size is also affected by land fragmentation stemming from population growth, a circumstance that makes comparisons of farm size across generations and between age groups difficult. The weak or negligible correlations between household demographic determinants and farm size as revealed by regression analysis are therefore not very surprising. In fact, only two per cent of the observed variance in farm size is explained on the basis of the demographic characteristics of the household.

It is in line with our expectations, however, that Seuri households, having both the lowest c/w ratio and the highest labour force, display a pronounced tendency for land accumulation (see Table 16.6 and 16.7). Most likely, Seuri households on average consume beyond subsistence needs, invest part of their surplus and show a limited preference for leisure. But so do Ultalala households, despite the fact that they have a significantly smaller labour force and higher c/w ratio than Seuri households. On the basis of available data, it is difficult to see what separates the two age groups in terms of accumulation and consumption behaviour and why a larger proportion of Seuri households in comparison with Ultalala has not only purchased but also parted land (Table 16.6).

What can be said, however, is that we cannot explain the similar behaviour of the two groups from a Chayanovian model of subsistence driven consumption since this would have implied different land strategies given their different demographic compositions. Ultalala households seem to be motivated by current or anticipated consumption demands that go beyond both basic needs and the average consumption demands felt by the Seuri

group. Given their higher c/w ratio, we may hypothesise that they have to work harder/earn a higher income in order to achieve a rate of accumulation similar to that of the Seuri group. To test this, we would have needed more detailed data on per capita working hours, income level etc. Such data could also have revealed differences between the two groups in their allocation of labour/income between present and future consumption (investment).

As it is, we can only conclude that the relatively high c/w ratio found for Ultalala households occurs simultaneously with accumulation. Among probable driving forces are the needs to feed a growing family, pay for children's education and meet modern welfare goals. Although such needs are increasingly met through off-farm incomes for the Ultalala and Kakisha age groups, land is much sought after a commodity and is seen as a security for old age and for children's provision when grown up.

The small farm size of the Kakisha age group seem to be in accordance with Chayanov's model given the small size of the labour force and the small numbers of consumers typical of households in this group (Table 16.5 and 16.7). On the other hand, the Kakisha group has a high proportion of households expanding their farms through borrowing and renting arrangements (Table 16.6, column d). This behaviour may be in anticipation of coming expenses and reflect rising consumer demands, an outlook they share with Ultalala households. As noted by Harrison (1982, 252-3), Chayanov failed to consider time preference, which has implications for current and future consumption. In this case, time preference would mean investments in land or education for children, savings in order to build a modern house etc.

It should also be noted, again in view of the relatively low c/w ratio and small overall land holdings for the Kakisha group, that a likely alternative to land accumulation is increased reliance on off-farm incomes, for example through small business investments. The accumulating behaviour of the Kakisha and Ultalala groups may be indication of more recent developments in Meru in which generational differences in consumption levels and aspirations are emerging, and with the young generation taking the lead in demanding modern consumer goods and life styles. The findings presented in Chapter Eleven point in this direction. Unfortunately, apart from land, we lack data on accumulation and partitioning of other assets and incomes that would have further illuminated this situation.

For the older age groups, and in particular for Kisali households, a high c/w ratio and a small labour force imply a high rate of land partitioning. In this case, a high c/w ratio reflects the limited physical ability of elderly household members. In contrast to younger households, high c/w ratios and small family size for the Sitimu and Kisali age groups seem to indicate reduced consumption, increased dependency on relatives and subdivision of holdings.¹⁷⁵ Consequently, a high c/w ratio, as well as a small absolute number of consumers and workers, seem to imply opposite strategies with respect to land depending on whether households are young or old.

In no case does the correlation (r) between any of the demographic determinants and the different indicators of land accumulation/partitioning presented in Table 16.6 exceed 0.20. On the whole, little of the variance in the accumulation/partition of land can be explained through the demographic characteristics of the household. What we see is a clear life cycle pattern in the way farmland is accumulated and parted but where the conventional Chayanovian factors offer little explanation.

Interpreting wealth and life cycle indicators

The wealth index represents a somewhat more flexible and appropriate resource indicator than does farm size given the history of land shortage, farm intensification and off-farm incomes in Meru. And on the basis of Tables 16.5-7, there seems to be a more solid association between the demographic composition of the household and wealth, at least when looking at aggregate means. The correlation between labour force/consumer

175 A methodological comment is in place. Ideally, the c/w ratio should reflect not only the situation of the household examined but also inter-household dependencies. In Meru, it is the youngest son who is given the responsibility of caring for his old parents and he builds his house next to that of his parents. This obligation, however, is not reflected in the c/w ratio of the son's household. Similarly, an old mother and widow may be the formal owner of a piece of land. Yet, a son nearby may in reality cultivate that land. The failure of survey data to take account of these subtle arrangements have probably caused c/w ratios of old households to be overestimated and c/w ratios of younger households to be underestimated. Taking full account of these considerations would have required a redefinition of households and the incorporation of very old households (widows) into those of their sons. This, however, would have created other problems since old households in other respects retain some economic independence.

number and the wealth index is 0.35, while that between c/w ratio and wealth is negligible. In all, the demographic determinants linked to the life cycle account for about 12 per cent of the variance in wealth observed among the households. We can observe this impact in Tables 16.5 and 16.7 in the form of differences between the age groups in their mean scores on household size and on the wealth index. The 12 per cent are substantially more than the two per cent we recorded for farm size but still not very much. The remaining 88 per cent of the variance are due to other factors, some of which may be linked to the life cycle in the form of non-demographic variables and some of which may refer to other influences.

What the data show is largely in line with Netting's argument that Chayanov's model loses much of its validity in a context of land shortage and market production. Demographic determinants can only explain a minor part of the observed difference in wealth between households. This is not to say that other age related factors are unimportant. On the contrary, a number of additional such factors contribute to give the wealth distribution the shape of a life cycle curve. For example, young households tend to accumulate land and other incomes/resources regardless of their demographic composition but driven by aspirations of wellbeing typical of their generation. Old household heads, on the other hand, tend to subdivide their land and other assets, not primarily because their household size is smaller but because they are compelled to do so by the marriage of their sons or by the death of a spouse and because their subjective consumption demands are more modest than those of younger households.

Responses under land shortage – the propensity to hire labour

Where the land frontier is closed, there is a limit to the amount of land that can be redistributed. In this situation, households may look for alternative and possibly more flexible solutions to the 'problem' of a growing or shrinking family labour force. One such option is increasing or decreasing the level of farm intensification. Where, in addition, there is a market for labour, families may complement own inadequacies in labour by hiring in labour

from outside or themselves seek employment or business activities as a means of gaining complementary cash income.

As we have seen, the size of the family labour force is linked to the life cycle so that the Seuri age group, at the peak of the life cycle, has the largest labour force of all groups and the lowest c/w ratio (Table 16.7). For this reason, one can assume that the need for the Seuri age group to hire additional labour for farm work would be less than it is for younger and older age groups who have less family labour at their disposal and who in addition must cater for a larger relative number of dependants.

This also seems to be the case, however, with two important exceptions, the first one of which bears on the observation that the hiring of labour is only partly a life cycle phenomenon. When we control for wealth, we find that the propensity to hire labour appears to follow a rudimentary life cycle pattern but only for the middle and richest wealth groups (3-5), while for the poorest groups (1-2) no such pattern can be detected (Table 16.8). When tested with ANOVA, however, between group differences among the wealthier strata are not sufficiently large to be statistically significant. We observe from the Table that wealth position has a stronger impact than age or life cycle position on the number of tasks for which households hire labour. Secondly, we note that the propensity to hire labour increases with age, regardless of the size of the domestic labour force or c/w ratio (column 'All', Table 16.8). The more frequent hiring of labour by elderly households most likely reflect labour incapacity due to high age and/or a size of the farm that is 'too big' in relation to available labour.

Table 16.8: Mean scores on the labour hiring index (1-100) per age group for households of different wealth.*

Age group	Labour hiring scores:		All
	Wealth groups 1-2 (poorest)	Wealth groups 3-5 (richest)	
Kakisha	7	25	15
Ultalala	11	24	20
Seuri	11	21	18
Sitimu	18	29	26
Kisali	26	38	32
Total	13	25	21

* Only the third column is statistically significant at 0.01 level when tested with ANOVA.

Working off-farm and intensifying land use

While there is a rudimentary life cycle pattern in the way households compensate own labour shortages by hiring labour from outside, no such pattern can be detected when it comes to the direction of domestic 'surplus' labour. One would have assumed, for example, that the Seuri group, having the largest labour force and few dependants, also should have had a larger proportion of household members engaged in off-farm activities than other age groups. As can be seen in Table 16.9, this is not the case (also in the Table is a column replicating the labour hiring index from Table 16.8, and a column on farm productivity to be dealt with below). Household members seek off-farm work regardless of the size of their household labour force or c/w ratio. Such work is clearly linked to age in the sense that the younger the households, the larger the proportion of the household labour force that is involved in off-farm income activities (Table 16.9).

Table 16.9: *Age groups, labour force, c/w ratio, off-farm work and mean scores on hired labour, and farm productivity indices.**

Age groups	Size of household labour force	c/w ratio	Hh labour force working off-farm (%)	Farm productivity index (1-100)	Labour hiring index (1-100)
Kakisha	2.2	1.4	47	48	15
Ultalala	3.2	1.6	38	52	20
Seuri	5.1	1.2	33	52	18
Sitimu	3.1	1.5	21	46	26
Kisali	1.8	2.0	18	44	32
Total	3.3	1.5	34	50	21

*Between group differences are statistically significant at 0.01 level or below except for c/w ratio (ANOVA).

Off-farm work is also correlated with wealth, meaning that households of the Poorest and Middle Poor groups (1-2) are more involved in such activities than is the case for wealthier households (Table 16.10). Note, however, the remarkable increase in off-farm work for the uppermost stratum for which diversification is a way of raising and investing surplus incomes (see also Chapter Fourteen, Table 14.4 and 14.5). Young households, generally,

involve themselves in off-farm activities in order to satisfy aspirations for higher consumption. Poor households do the same but for partly different reasons. In this case, off-farm work is sought as a relief to distress caused by shortage of land. Since young age and small farm size often overlap, the two constitute a strong force for the occurrence of off-farm income seeking behaviour.

Looking at farm intensification, finally, our conclusion is that the size of the family labour force and the c/w ratio have only a minor impact on farm productivity. The Seuri group, for example, scores higher than most other groups but only marginally so, and it does not diverge from the Ultalala group that has quite different values on household size and c/w ratio (Table 16.9). Productivity is to some extent linked to age in the sense that households of Seuri age group or younger score somewhat higher on the productivity index than the older groups, although differences appear to be rather small. The lower score for the Kakisha age group may be due to that young households prefer to look for off-farm incomes instead of intensifying land use.

Most clear, however, is the link between productivity and wealth, and it is also here we find the largest differences between the groups examined (Table 16.10).

Table 16.10: *Wealth related mean scores on labour force, c/w ratio, hired labour, off-farm work and farm productivity.**

Wealth groups	Size of household labour force	c/w ratio	Hh labour force working off-farm (%)	Farm productivity index (1-100)	Labour hiring index (1-100)
1 (poorest)	2.4	1.5	43	40	10
2	2.9	1.5	39	46	16
3	3.5	1.5	29	47	19
4	3.7	1.5	30	56	25
5 (richest)	4.5	1.4	35	65	46
3 % richest	4.8	1.4	48	67	55
Total	3.3	1.5	34	50	21

*Between group differences statistically are significant at 0.01 level or below except for c/w ratio, which is non-significant (ANOVA).

Regression analysis confirms the pattern seen in Tables 16.8 – 16.10. We examine in turn ‘hired labour’, ‘farm productivity’, and ‘off-farm work’, and

control for the co-variation in causal factors by looking at partial correlations (and the standardised beta-values). We find that the propensity to hire labour is more strongly correlated with wealth (0.50) than with the (smaller) size of the household labour force (-0.15), and not at all with the c/w ratio (0.01) (see also Table 16.8).¹⁷⁶ Also, scores on farm productivity are correlated with wealth (0.30) as we saw in Table 16.10, but are negligible with respect to age (-0.07), the size of the labour force (0.04), and the c/w ratio (0.03).¹⁷⁷

The proportion of the household labour force involved in work outside the farm, finally, is foremost associated with the age (-0.27) of the household (head), and only to a small extent with wealth (-0.12). This means that low age, and to some extent poverty conditions (a small farm size), propel household members to seek off-farm work (the opposite is of course also possible, i.e. that poverty is reinforced as a result of low off-farm incomes). The percentage of the labour force involved in off-farm work is not correlated with the size of the domestic labour force (0.05), as one perhaps would have expected, but shows a weak negative correlation with the c/w ratio (-0.14), meaning that the smaller the proportion of dependants in a household, the more likely are adult members to work outside the farm.

The general pattern presented in Tables 16.8 – 16.9 also holds when we control for sex, although it is difficult to argue in life cycle terms in the case of female households since, in the case of widows and divorced women, a great part of their life cycle trajectories are linked to those of their former husbands. In any case, female-headed households consistently score below male-headed ones on the productivity index and they show a lower propensity to work outside the farm. These are probably effects of the social norms circumscribing female resource tenure, the domestic role ascribed to women in general and the fact that many of them are poorly educated and elderly (and retired) widows. The latter circumstance also explains why female-headed households show a somewhat larger propensity in hiring farm labour. This is most likely a result of their higher average age and lower labour capacity to do farm work.

176 The correlations between hired labour and wealth/household labour force are significant at <0.001 level under the assumption of SRS.

177 The correlation between wealth and productivity is significant at <0.001 level.

Concluding notes

To sum up, we conclude that the wealth differentiation found to exist in Meru has several aspects or dimensions. One is related to gender in the sense that female headed households are disproportionately represented in the poorer wealth groups (Chapter Sixteen). This is partly a result of the patriarchal nature of Meru society, which ascribes domestic roles to women and circumscribe their access to resources and income.

Another inequality aspect is related to population growth through which male heirs are granted land of smaller size than that received by their parents. On average a son in the 1990s inherited only 20 per cent of the land his grandparents obtained in the 1930s or early 1940s. This intergenerational inequality in land holdings is, however, somewhat 'cushioned' by the fact that subsequent generations have compensated their shrinking holdings by intensifying farm production, by being better educated and by fetching incomes from outside the land. In terms of general wealth, differences between generations are considerably smaller than what appears from the size of initial land holdings alone.

Intergenerational differences between today's young and old households are somewhat levelled out also from another factor, that of the life cycle. Old households are dividing their heritage while young ones accumulate land and other resources. The life cycle, implying phases of accumulation and dispersion of wealth and land, is found to account for part of the social stratification that can be observed in Meru. Life cycle position is associated with wealth and farm size in a way that makes middle aged households (Seuri age group) more likely to score higher on the wealth index.

Of particular interest is if the life cycle variation in wealth can be described as 'demographic differentiation' in line with Chayanov's model. For the Seuri group, for example, more wealth and a larger farm size appears to be associated with a large labour force and few dependants. However, we also see that young households accumulate land resources and old households distribute them almost regardless of the proportion of dependants in the household (c/w ratio) or the size of the labour force. We conclude that accumulation and division of land, as well as wealth position and farm size are partly determined by age or life cycle related factors other than the c/w ratio and labour force size. To some extent, wealth reflects the opportunity

balance between off-farm and farm incomes that the respective age groups are facing. This balance is in turn influenced by factors such as size of initial land holding, educational level, market conditions and personal skills and motivation.

In the Meru situation of severe land shortage, many young households have found that the land option for meeting desired consumption needs is closed or that the terms of selling farm products are unfavourable. This has signalled a shift in the livelihood preference from farm to off-farm incomes. While land remains a crucial resource also for these households, in reality many of them rely on off-farm incomes. In this situation of market dependence and integration, consumption demands are flexible and elastic. Market inspired consumption demands and Western consumerism to a larger extent than the c/w ratio influence the household allocation of labour and the desire to accumulate land and other resources.

The hiring in of labour from outside the farm follows the life cycle according to the Chayanovian model, at least in a rudimentary sense. Households with a large labour force hire labour somewhat less frequently than do those who have a smaller labour force. No life cyclical pattern, however, can be observed for farm intensification/productivity. More than anything else, both the hiring of labour and intensifying land are associated with the wealth position of the households. The propensity to engage in off-farm income activities increase marginally for poor households and for households with few dependants but is above all associated with age, implying that young households are more inclined to work off-farm than are older ones.

The small influence of the c/w ratio on labour allocation and wealth may seem surprising and is somewhat contradictory to the common statements by households during interviews that life has become very expensive and that the cost of having children, in terms of food, clothing and education, is an economic burden. In fact, the cost of children and their education is today the main reason for the acceptance of family planning and a shift to smaller family size. Then, why are these considerations not visible in the form of a clear correlation between, for example, wealth and c/w ratio? Part of the explanation lies in the nature of our wealth data that may be too crude in respect of absolute income level and consumption standard. What the data do tell us is that the c/w ratio has only a marginal bearing on most wealth indicators or on the propensity to work off-farm as such. It is prob-

able, however, that the c/w ratio would have shown at least some association with per capita consumption and income levels, or with hours worked per day by able household members should more precise such data have been available.

Informal interviews with household members with schoolchildren, for example, suggest that they both work longer hours and reduce their own consumption in order to meet expenses for school fees etc. compared to households with few dependants. On the other hand, the impact of dependants should not be exaggerated. Also between households of similar c/w ratio and age do consumption and income levels differ substantially.

As a general conclusion, we find that there is a distinct life cycle pattern in wealth, farm size and in the pattern by which land is accumulated and divided. This pattern can only to a minor extent be described in terms of the Chayanovian model of 'demographic differentiation'. Both age and life cycle position have some influence on farm management, in the choice of strategies pursued by individual households regarding the balance of incomes from farm and off-farm activities, and in the need for hiring labour from outside the farm. In terms of household labour resources, which positively correlate with the wealth index, the Seuri group at the peak of the life cycle has an advantage over other age groups. However, it remains a fact that Seuri households between themselves diverge in wealth.

In the next chapter, we will deal with this central issue, i.e. the stability over time of wealth and inequality. Our investigation has both empirical and theoretical relevance and bears directly on the central and classical debate in agrarian sociology. Empirically, our question is simple. Looking back some two or three generations in Meru, what can we say about the extent of economic polarisation and social mobility?

Class or mobility? Intergenerational wealth differences over time among Meru households

Introduction

In spite of the centrality of the issue of inequality and class formation in agrarian sociology, few studies of peasant societies deal explicitly with this issue from a social mobility perspective.¹⁷⁸ This is partly due to the problem of finding reliable socio-economic indicators that can reveal changes within wealth or class hierarchies over time. The bulk of studies on social mobility have been carried out in industrial countries where they link up with a wider discourse on social structure, class, opportunities, and privileges. Methodological problems are many. Assuming occupation to represent social standing, sociologists have traditionally measured changes in people's occupation when assessing the extent of social mobility. According to this method, a strong association between, for example, fathers and sons regarding their respective occupations would indicate a low rate of social mobility, while a weak association would reveal a high rate of mobility (Jencks 1990).¹⁷⁹

178 One exception is van Schendel's (1981) work on peasant inequality and mobility in rural Bangladesh.

179 For an overview and discussion on methodology, see for example contributions in Breiger (1990).

In a developing country context, these methodological considerations are larger. For example, it would be virtually impossible to construct a meaningful scale of social or economic standing based on occupation in an African peasant society due to a relative homogeneity in economic activities and livelihoods. What then, can be done to overcome these problems in order to assess the mobility rate in a society characterised by farming as the main occupation, yet clearly stratified in terms economic resources?

In this context, we are interested in finding out if observed differences in economic standing between households, i.e. wealth, remain stable or fluctuate over time. We will control for age and sex related inequality by limiting our analysis to male household heads of similar age. These will thereafter be compared with their brothers, sons/grandsons, and fathers/grandfathers.

It should be noted that we will primarily deal with changes in the *relative* wealth position of members of different generations regardless of developments in absolute wealth. The latter aspect, i.e. the extent to which one generation differs from another one in terms of absolute income or other objective welfare indicators is a slightly different issue, which we will come back to in the next chapter.

Method

Our wealth index is based on assets that are crucial to households in all peasant societies, Meru being no exception. However, reliable and comprehensive official records regarding such assets as a rule do not exist. Nor is such data easily collected in the field, especially when the aim is an historical recapitulation of wealth. Moreover, the significance of different wealth criteria tends to change over time as conditions of livelihood change in society.

In view of these difficulties, we would need a method that could inform us about the distribution of wealth through criteria that are both proper for the generations examined and found valid by local members of the community. Our positive experience of using the wealth ranking technique as a complement to survey interviews gave us the idea of using this technique for investigating changes in wealth positions over time. The requirements were that the age of our studied household heads was known, at least approxi-

mately and, in the case of intergenerational mobility, also the blood relationship between them.

As study area was selected Mavinuni subvillage in Singisi village, a place we knew well from previous visits and where our research was well known among villagers. Our decision to investigate the mobility of male household heads was motivated from the fact that the Meru define descent and residence on the male side. The age-set organisation served as a basic age indicator and tool of classification, according to which the subvillage population of male household heads were divided into the same five age set groups as presented earlier (see Table 16.3 in Chapter Sixteen), albeit with some minor deviations in figures due to a different sample being used. The age set groups are given in Table 17.1.

Table 17.1: *Age groups, mean age 1995 (years)*¹⁸⁰

Age group	Mean age
Kisali	86,67
Sitimu	72,74
Seuri	56,86
Ultalala	40,43
Kakisha	29,37

We started from our household census in Mavinuni in 1995. We listed the names of the members of the different age groups and asked a couple of well-informed villagers to identify their respective fathers, grandfathers, brothers, and sons. Out of this exercise we identified *all* Kisali heads that presently were living or at any one time had been living in Singisi village and who were ancestors of household heads now residing in Mavinuni subvillage. Kisali heads were members of the oldest age group in the study, most of who are now deceased.¹⁸¹ This group of 46 Kisali fathers constituted our

180 Mean age has been calculated on the basis of the entire survey sample for Singisi village in 1995/96, i.e. 237 now living male household heads. Since the survey, a new age group has emerged, the Kilowiyo, being the youngest group and the sons of the Ultalala members. To date, the Kilowiyo is represented by a few individuals only and is ignored here.

181 To the Kisali members were added a small number of Ultareto age group members who preceded the Kisali group, both groups being the fathers of mainly Seuri age group members.

'ancestor' group. From them we constructed family trees containing all their sons and grandsons. The total number of heads appearing in the study was 317, out of whom 310 were subject to valid rankings. The resulting age group distribution is given in Table 17.2.

The family trees incorporated persons who had outmigrated or died. We decided to exclude from the study descendants who had migrated *out of the village* but to include those who had settled *within* Singisi village and who were known to the community. The exclusion of migrants was made on the basis that their whereabouts may not be well known and their wealth status cannot easily be reconstructed and compared against local criteria. Descendants who had died, however, were included on the assumption that their wealth would be remembered and could be compared with their age mates.

Table 17.2: Age groups and number of members.¹⁸²

Age group	Number	Percent
Kisali	46	14,5
Sitimu	40	12,6
Seuri	49	15,5
Ultalala	99	31,2
Kakisha	83	26,2
Total	317	100,0

Rankings were carried out according to the procedures developed during prior regular ranking exercises. Each age group constituted a sub-population that was ranked independently of the others in order to produce age or generation specific ranking scales. After the ranking scales had been standardised, the related household heads from different age groups were compared. Each household head was subject to eight independent rankings. The final

182 Given a fertility rate of about 3 % per year one would have expected a 'cone' shaped age structure with the youngest and most numerous groups at the base. The Kisali age group is relatively big due to the inclusion of some Ultareto members. Seuri age group, on the other hand, is small compared to Kisali and Sitimu because of outmigration among the members in this group who's family formation coincided with the expansion to the plains in 1950s and 60s. The youngest group, Kakisha, is relatively small, partly because many of their members are not yet married, and partly because, being the sons of Seuri, many of them have migrated to inherit land on the plains. With the exception for Kisali age group, the distribution is in accordance with the one obtained from a random sample of the entire Meru population.

wealth position of a household head is based on the mean of these rankings.¹⁸³

Results

Looking at correlations between fathers and sons, zero correlation would imply that the position of a son has nothing to do with the wealth of his father. A correlation close to one would indicate a situation with no mobility and in which sons consistently inherit the positions of their fathers. These are theoretical situations, however, which in practice never occur. In our subvillage population, we identified 243 father-son pairs. The overall correlation between fathers and sons was 0.59 (significant at <0.001 level) (Figure 17.1).¹⁸⁴ In this case, 35 per cent of the variance in wealth that we observe among Mavinuni household heads (sons) can be explained by their parental origin.

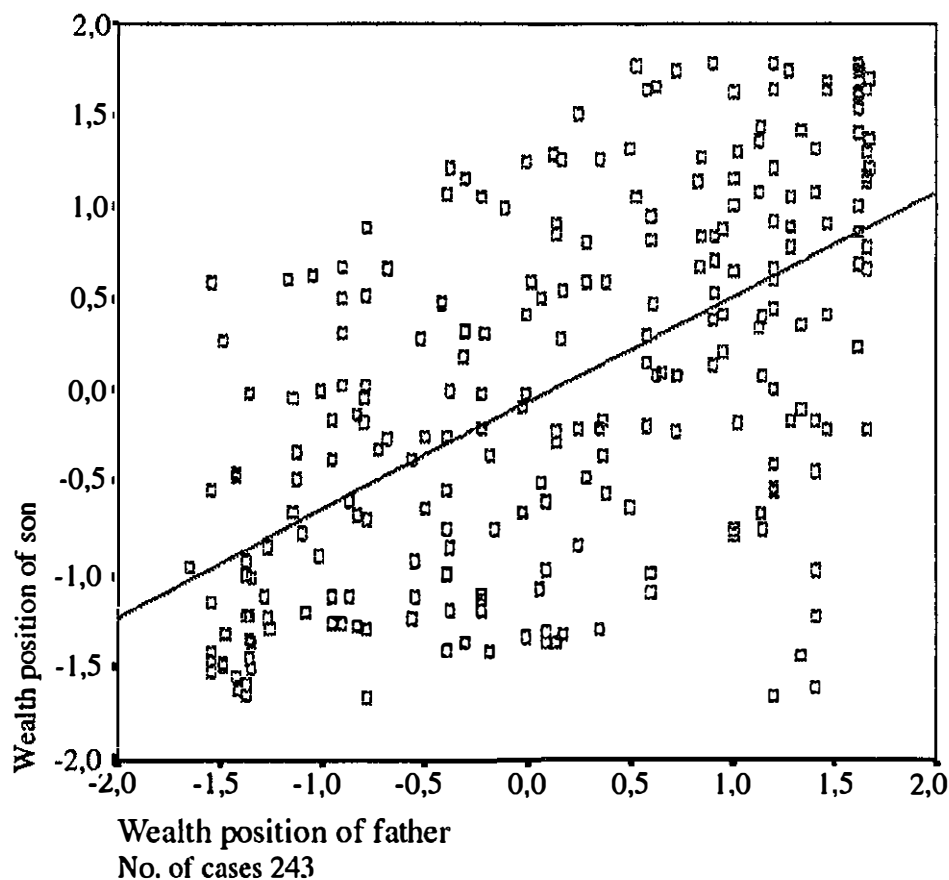
The generational correlations presented above are weakened when we investigate wealth associations over two generations, i.e. respondents and their grandfathers. In the subvillage there were 103 Ultalala and Kakisha respondents being the grandsons of 30 Kisali grandfathers. Their correlation was 0.34 (significant at 0.01 level). In this case, only about 12 per cent of the variance in grandsons' wealth could be explained by the wealth position of their grandfathers.

The correlation and regression values presented suggest that in the subvillage studied, the wealth position of a male person is influenced by the resource endowments of his father. There seems to be, however, a considerable scope for up- and downward mobility, which perhaps most clearly can be shown through graphical illustration (Figure 17.1).

183 A detailed methodological description is given in Appendix IV. See also Methodology Chapter.

184 Statistical significance has no real meaning for our examination since we deal with a population and not with a sample. We may, however, look at our subvillage population as a sample of the larger Meru peasantry. Although such a sample is not a random probability sample, a significance test may serve as a rough indicator of what is the situation in Meru as a whole.

Figure 17.1: Scatter graph and regression of wealth positions of fathers and sons.



Wealth groups compared

General correlations, however, tell us little about the mobility pattern for specific strata. From what we argued in the theoretical review (Chapter Thirteen), in the Marxist tradition, as advocated by Bernstein and others, the implicit assumption is that sons replicate the wealth or poverty of their parents, particularly in strata that are very wealthy or very poor (Bernstein, 1982). It is, in actual fact, difficult to think of social classes without some kind of barrier against intergenerational mobility. Contrary to this position is the standpoint emanating from Chayanov, advocated by Netting and others, claiming that tendencies towards class formation are neutralised by a high rate of inter- and intra-generational mobility through demographic and other factors (Netting 1993, 189ff).

Empirically, we may find situations that share elements of both these theoretical positions. In fact, the situation where near perfect mobility exists for some strata while, at the same time, there are barriers to mobility for others, e.g. 'quasi-perfect mobility', is a common situation facing mobility research in developed countries (Hout, 1983, 18ff). In our Meru case, such a situation could be one with low rates of mobility to/from poor and wealthy strata compared to the ones in the 'middle' wealth groups. The possibility of this scenario is raised as a result of in-depth interviews with prosperous households on their family backgrounds as well as by discussions held in conjunction with the household rankings made earlier. At this stage, we may treat this outcome as a hypothesis.

In order to test the hypothesis, and to gain knowledge about the wealth origins and destinations of our respondents, we constructed a 'mobility table', e.g. a cross-tabulation of the respective wealth positions of fathers and sons. For simplicity, sons and their fathers are divided into five wealth groups, each containing about 20 per cent of the heads (Table 17.3). This is done by means of the SPSS procedure 'K-Means Cluster Analysis'.¹⁸⁵ The tail ends of the poor-rich continuum are labelled the 'Poorest' and the 'Wealthiest', respectively. Next to them are two groups labelled 'Poor Middle' and 'Wealthy Middle'. In between these is the Middle group. The exact distributions of fathers and sons in these wealth groups are given in Table 17.3.¹⁸⁶

185 The procedure is described in connection to the earlier classification of wealth groups based on survey data. For consistency, we employ a classification similar to the one used earlier in Chapter Fifteen.

186 Note that there are 110 valid rankings of fathers in the population. Since a father's rank here is defined as a characteristic of his son, a father will appear in the distribution as many times as he has sons.

Table 17.3: *Distribution of fathers and sons (per cent) per wealth group. Valid rankings.*

Wealth Groups	Number of sons	Per cent distribution	Number of fathers	Per cent distribution
Poorest	49	20.2	39	16.0
Poor middle	42	17.3	46	18.9
Middle	54	22.2	54	22.2
Wealthy middle	54	22.2	60	24.7
Wealthiest	44	18.1	44	18.1
Total	243	100.0	243	100.0

In Table 17.4 the frequencies for the 243 pairs of fathers and sons are given, divided into wealth groups. In this kind of table, the use of a Chi² test for testing the null hypothesis of no association is appropriate, since statistical independence here implies a situation of perfect mobility (Hout 1983, 13ff). Applying the Chi² test, we see that the observed distribution by far exceeds the critical value for, in this case, perfect mobility (significance <0.001 level). We conclude the existence of a statistically significant association between the wealth of fathers and sons. This is illustrated by the shading of the cells along the diagonal where we can see how observed frequencies differ from those, which are expected under a situation of perfect mobility (the latter in *Italics*). We can also see that these differences increase as we move towards the Poorest and Wealthiest groups. Our preliminary conclusion confirms the hypothesis. While the scope for mobility appears to be good in the middle group(s), it becomes increasingly restricted as we approach the extreme ends of the scale. A more fine tuned classification, for example one in which the 10 per cent wealthiest and poorest respondents are singled out, confirms this tendency by displaying even larger differences between observed and expected frequencies.

How far from a situation of perfect mobility are we in this case? A rough indicator is the 'index of dissimilarity', calculated as the sum of positive differences between observed and expected frequencies in a mobility table (Hout 1983, 12, 15).¹⁸⁷ In our table, the index tells us that about half the number of respondents are misplaced (49.7 per cent) compared to a situation of perfect mobility.

187 The index is a 'rough' measurement since it will tend to increase with increasing number of groups in a table.

Table 17.4: *Mobility table (cross-tabulation) of fathers' and sons' wealth positions. Observed and expected frequencies (the latter in Italics).*

Sons:

Fathers:	Poorest	Middle poor	Middle	Middle wealthy	Wealthiest	Total
Poorest	21 <i>7.9</i>	11 <i>6.7</i>	4 <i>8.7</i>	3 <i>8.7</i>	0 <i>7.1</i>	39 <i>39.0</i>
Middle poor	11 <i>9.3</i>	12 <i>8.0</i>	14 <i>10.2</i>	8 <i>10.2</i>	1 <i>8.3</i>	46 <i>46.0</i>
Middle	12 <i>10.9</i>	9 <i>9.3</i>	15 <i>12.0</i>	11 <i>12.0</i>	7 <i>9.8</i>	54 <i>54.0</i>
Middle wealthy	2 <i>12.1</i>	8 <i>10.4</i>	15 <i>13.3</i>	20 <i>13.3</i>	15 <i>10.9</i>	60 <i>60.0</i>
Wealthiest	3 <i>8.9</i>	2 <i>7.6</i>	6 <i>9.8</i>	12 <i>9.8</i>	21 <i>8.0</i>	44 <i>44.0</i>
Total	49 <i>49.0</i>	42 <i>42.0</i>	54 <i>54.0</i>	54 <i>54.0</i>	44 <i>44.0</i>	243 <i>243.0</i>

Another crude indicator of association is the 'mobility ratio' (R), i.e. the ratio of the observed frequency to the frequency expected under perfect mobility (Hout 1983, p.17).¹⁸⁸ When R is close to one, we have a situation of near perfect mobility, the further from unity, the stronger is the association and the lower is the rate of mobility. Following the diagonal, we see that R for the Middle group is close to one (1.25), indicating near perfect mobility, while for the adjacent Middle Poor and Middle Wealthy groups, the ratio is 1.5 for both. For the top and bottom groups, the ratio is 2.7 for the Poorest group and 2.6 for the Wealthiest group. Also in this case, narrowing down the Poorest and Wealthiest groups to the uppermost and downiest 10 per cent of the respondents, confirms the tendency that mobility decreases as we approach the most poor and most wealthy strata in our population. In this case the mobility ratios are estimated to 4.8 and 4.5, respectively.

188 It should be noted that Hout (1983) raises a warning against the use of the 'mobility ratio' which he considers to be an inappropriate measure of association. The main reason is that two tables may produce similar associations between fathers and sons, yet different marginal distributions may lead to different mobility ratios. Another objection is that the mobility ratio departs from the model of perfect mobility. As such, it disregards from the fact that all observed frequencies are the result of marginal distributions, systematic association, and errors. Failure to recognise that the ratio incorporates a component of unknown error often makes it a misleading measure of association.

Then, what characterise these restrictions on mobility from the Wealthiest and Poorest groups? In order to answer this question we need to examine in more detail the pattern for the intergenerational reproduction of wealth, i.e. how heads are distributed according to *origins* and *destinations*. This can be shown by percentage distributions along columns and rows in a mobility table (Hout 1983, p.11). In Table 17.5, we observe in which wealth groups the sons end up when compared to the specific wealth of their fathers (origin).

Table 17.5: *Wealth destinations of sons. Distribution in per cent.*

	Poorest	Middle poor	Middle	Middle wealthy	Wealthiest	Total
Fathers:						
Poorest	53.8	28.2	10.3	7.7	0.0	100.0
Middle poor	23.9	26.1	30.4	17.4	2.2	100.0
Middle	22.2	16.7	27.8	20.4	13.0	100.0
Middle wealthy	3.3	13.3	25.0	33.3	25.0	100.0
Wealthiest	6.8	4.5	13.6	27.3	47.7	100.0
Total	20.2	17.3	22.2	22.2	18.1	100.0

We observe from the Table that the Poorest fathers in most cases replicate their poverty condition. More than 80 per cent of their sons are found in the two poorest groups. No father in this group has a son among the Wealthiest households. As for the sons of the Wealthiest fathers, they display a similar pattern of restricted mobility, i.e. they stay close to their origin. In a few cases, however, sons from wealthy fathers have dropped to the Poor and Middle poor groups.

Our conclusion is that considerable mobility exists generally, and particularly among the middle groups. For the Middle group, representing 20 per cent of the respondents, near perfect mobility is the case when this group is analysed with respect to destinations (sons). In the adjacent middle groups, the family background appears to have some influence on wealth destinations. This tendency becomes pronounced towards the tail ends of the ranking scale, where a person's wealth to a greater extent seems to be ascribed rather than acquired. As before, this trend is even stronger when we investigate the 10 per cent uppermost and lowest respondents.

Regular rankings carried out in preparation of village surveys, and discussions held with ranking informants during these occasions, on the whole confirm the above pattern. A person may improve his 'initial' situation by skill and hard work or end up worse due to mismanagement of resources, failure to grab opportunities or due to misfortune such as death or sickness in the family. It was generally held, however, that poor persons could not climb the social ladder all the way to the top since the resources and capital required were beyond their reach. Correspondingly, wealthy persons could fall to a middle position but hardly below that. The security network offered by relatives, the size of initial holdings, the regulations circumscribing land transfers etc. would protect them from the destitution that would be the fate for persons with less initial endowments facing similar misfortunes. We can see that this view does not fully hold water, however, when we look at the destinations of sons with the wealthiest and poorest fathers.

Household case studies and life histories recorded in Singisi and elsewhere add further evidence in this direction. Cases are many where individual skill, talent and aspirations, and their contrasts; misuse, ignorance, excessive drinking or misfortune, have altered apparently deprived or favourable parental predicaments. At the same time, it must be recognised that the wide difference in parental wealth implies quite different starting conditions for individual life trajectories. At least for households of the richest and poorest strata, these conditions partly prevent mobility downward and restrict mobility upward within the course of the two generations investigated here. Over three generations or more, however, mobility to/from these strata is probably greater in view of the low general correlation found between younger household heads and their grandfathers.

The validity of these findings hinges on a number of conditions, the most important one perhaps being the consequences of migration. For example, outmigration by destitute sons from poor parental strata would tend to give an exaggerated impression of upward mobility from such strata based on the behaviour among successful resident heirs (but disregarding destitute migrants). Similarly, selective outmigration among heirs of wealthy strata tends to generate an impression of downward mobility that is based on the behaviour of less successful resident heirs. We may conclude that both poverty and wealth driven outmigration occur to some extent and probably produce the effects described. On the other hand, the long-term effects of

outmigration are difficult to evaluate. Unless the purpose of outmigration is to settle on the plains, most migration is temporary in character and most migrants retain rights to land on the mountain. Survey data give no indication that outmigration is more common in one group more than in others. If it affects mobility data it probably does so with no preference to parental wealth.

Before closing this section, we should investigate to what extent downward or upward mobility depends on the number of siblings of a respondent, and especially the number of male siblings (brothers). In a situation where every son is granted a portion of his father's land, and consequently has to share a patrimony with his brothers, as is the case in Meru, the number of siblings can be assumed to have some consequence for the wealth position of an heir. Similarly, given a limited income, the ability for a household head to give all sons (and daughters) a good education is less in families where siblings are many compared to where they are few. If the number of surviving sons is independent of parental wealth, this can be assumed to increase overall social mobility. If child bearing systematically differs between strata, some strata will face relative advantage over time while others will face disadvantage as far as the wealth of heirs is concerned. It is commonly argued that better off groups have higher than average fertility and infant survival rates and therefore are more affected by downward mobility in the subsequent generation than strata with lower such rates (Netting 1993, 212ff). We will now look into some of these aspects.

The influence of number of siblings (brothers) on wealth

For this analysis, we start from our five wealth groups. We number them 1 to 5, beginning with the Poorest group, and we give each respondent a value equal to his wealth group. Subtracting the wealth position of sons from that of their fathers produces the frequency distribution given in Table 17.6. Negative values indicate that sons have wealth positions below the ones of their fathers, e.g. downward mobility. Positive values indicate upward mobility. Maximum divergence is ± 4 (5-1 or 1-5), which we can see was the case for only three respondents who had dropped from the Wealthiest group

of their fathers to the Poorest. As expected, the destination of the majority of sons is equal to or within close range to the position of their fathers.¹⁸⁹

In the next step we correlate the divergence of sons' wealth with their number of brothers.¹⁹⁰ Because of few cases with more than five brothers, these are treated as equal to five brothers. We find a negative correlation of -0.25 meaning that more brothers actually is related to downward mobility. The sibling (brother) factor has an influence on a person's wealth, albeit a minor one.

Table 17.6: *Direction and 'rate' of father-son mobility.*

Mobility 'rate'	Number of sons	Per cent distribution
-4	3	1.2
-3	4	1.6
-2	26	10.7
-1	47	19.3
0	89	36.6
+1	51	21.0
+2	19	7.4
+3	4	1.6
+4	0	0.0
Total	243	100.0

Sibling-effect per wealth group

The next step is to see if this general pattern is valid for each individual wealth group. To ensure enough cases for each sibling size, we need to reduce the number of categories for this variable. Three brothers seem to constitute a breaking point (mean number of brothers is 2.9). Above three, mobility is downward, below it is upward. To simplify the analysis we dichotomise the variable at this point so that three or less brothers equal 'few

189 We may here treat differences in rank as a scale variable, which is approximately normally distributed with the standard deviation 1.28.

190 We lack data on the number of sisters (i.e. total number of siblings). Given the fact that sons rather than daughters are the inheritors of the landed and other resources of the family, this simplification may be acceptable. With parents increasingly investing in daughters' education, the effects of sibling size on wealth may in fact be larger than we are able to demonstrate here.

brothers' and four or more brothers equal 'many brothers'. We are now ready to compare the five wealth groups with respect to the effect of few and many brothers. The result is given in Table 17.7.

Table 17.7: *Mean deviation from fathers' wealth for sons with few and many brothers, per wealth group.*

Fathers' Wealth Group	Number of brothers	Mean deviation	No. of cases
Poorest	Few	.76	29
	Many	.60	10
Middle poor	Few	.55	33
	Many	.31	13
Middle	Few	.08	37
	Many	-.65	17
Middle wealthy	Few	-.19	32
	Many	-.57	28
Wealthiest	Few	-.39	18
	Many	-1.35	26
Total	Few	0.20	149
	Many	-0.55	94

We see that for all groups, the result is consistent. As far as mobility is concerned, sons with many brothers tend to be at disadvantage compared to sons with few brothers. This is the general pattern for all groups. The negative impact of many brothers (siblings) is, however, most pronounced for sons of the wealthiest fathers, and least so for sons of the Middle Poor and Poorest groups. Correlation analysis yields a similar picture, with the strongest correlation found between rank deviation and number of siblings in the Wealthiest group (- 0.36). Note that it appears to become more common with many siblings as parental wealth increases. In fact, the correlation between parental wealth and the number of male offspring is 0.23, indicating that wealthy strata are more affected by downward mobility stemming from many heirs than are middle or poor strata with less average number of heirs.

Finally, we return to our mobility Table on 'destinations' (Table 17.5) in order to obtain an overall picture of how sibling size affects mobility. When

controlling for the number of brothers, we obtain two mobility tables: one for *few* brothers, one for *many* brothers (Table 17.8-9).

Table 17.8-9: *Wealth destination of sons as seen against few and many brothers. Distribution in per cent.*

Few brothers:

Fathers: Wealth Group	Sons:					Total
	Poorest	Middle poor	Middle	Middle wealthy	Wealthiest	
Poorest	51.7	27.6	13.8	6.9	0.0	100.0
Middle poor	18.2	30.3	33.3	15.2	3.0	100.0
Middle	16.2	16.2	29.7	18.9	18.9	100.0
Middle wealthy	0.0	9.4	28.1	34.4	28.1	100.0
Wealthiest	0.0	0.0	11.1	16.7	72.2	100.0
Total	18.1	18.1	24.8	18.8	20.1	100.0

Many brothers:

Fathers: Wealth Group	Sons:					Total
	Poorest	Middle poor	Middle	Middle wealthy	Wealthiest	
Poorest	60.0	30.0	0.0	10.0	0.0	100.0
Middle poor	38.5	15.4	23.1	23.1	0.0	100.0
Middle	35.3	17.6	23.5	23.5	0.0	100.0
Middle wealthy	7.1	17.9	21.4	32.1	21.4	100.0
Wealthiest	11.5	7.7	15.4	34.6	30.8	100.0
Total	23.4	16.0	18.1	27.7	14.9	100.0

Valid cases 149 (few siblings) and 94 (many siblings), total 243.

As compared to the original Table (Table 17.5), a situation of few brothers equals a greater chance for upward mobility and a smaller risk for of downward mobility, while many brothers reverse these trends. We can see that being a single heir of a poor family does improve one's chances of climbing the social ladder as compared to a situation with several heirs/brothers, but only marginally so. Being the only heir in a wealthy family, however, seems to have a greater impact on the chances of preserving the wealth of a father. Having many brothers, however, substantially increases the risk for downward mobility. We observe, for example, that all sons who originate from the Wealthiest group of fathers and who have ended up in the Poorest and Middle Poor groups, come from families with many brothers.

Brothers

Our final examination concerns the association between brothers. Since brothers share similar conditions of childhood and stem from the same set of parental resources one can assume that they will display similarities in wealth. In our Mavinuni population there are 238 respondents with at least one brother. All in all, these respondents represent a total of 598 cases of brother-to-brother relationships. The overall correlation between brothers is considerably less than that between fathers and sons, or 0.36. Hence, only about 10 per cent of the variance in the respondents' wealth is explained by the wealth of their brother(s). Correlations between brothers with wealthy and poor parents, respectively, are higher than for the middle groups, a finding that is in line with the restrictions on intergenerational mobility found for these groups.

Our conclusion is that brothers diverge substantially in wealth for reasons that are independent of their parental origin. Brothers display differences in educational level, in personal skills, motivation, ambitions etc. that account for the differences in income and resources that exist between them. We found examples where brothers represented extreme ends of the wealth continuum. One brother, a drunkard and a loiterer who was living from hand to mouth and adding problems to his family, eventually sold off his land to an elder brother, a respected leader and commercial farmer who had managed to take his sons through secondary education. Another similar case involved one respondent whose miserable life caused by excessive drinking was in great contrast to the progress shown by his younger brothers.

Concluding comments

Summarising our exercise, we conclude that in Mavinuni subvillage a situation of quasi-perfect mobility prevails. Substantial intergenerational and multi-directional mobility exists within the middle wealth groups. For the wealthiest and the poorest strata of the population, mobility is somewhat restricted and more so in the upper and lower ends of these strata. When mobility does occur, sons typically end up in the wealth groups adjacent to their

fathers. Brothers as a rule diverge substantially in wealth, however, slightly less so in the case their fathers are very poor or very wealthy.

Sibling size influences intergenerational mobility so that few siblings increase upward and decrease downward mobility. Many siblings reverse this pattern by increasing the risk for downward mobility and reducing chances for upward mobility. The impact of varying sibling size is most pronounced in the wealthiest group leading to a marked prevalence of downward mobility in families with many siblings. Moreover, the disproportional occurrence of large numbers of offspring in the wealthy group indicates a levelling trend, which is seen as a higher rate of division of wealth among heirs from this group compared to groups with fewer offspring. Seen over a period of only one generation, the overall impact of this process is limited, however, and it does not fundamentally alter the general picture of a restricted mobility in the poor and wealthy groups and a high mobility rate among middle groups.

With this reservation, the overall conclusion largely conforms to Netting's thesis of a stratified but mobile peasantry in which resource endowments are influenced by the timing in the life cycle course, land division between siblings, and individual skills, motivation, luck or misfortune. Our data yields no strong support for the thesis of an ongoing wealth polarisation in accordance with the classical interpretation of peasant change or in accordance with the proposition that increased reliance on off-farm incomes should produce such an effect.

The analogy that Seppälä makes between the popular *mbao* game¹⁹¹, found in every village in Africa, and the unpredictable nature of the economy fits well into the pattern of social mobility that has emerged here (Seppälä, 1998, 17ff). In the *mbao* game one's success depends on both a strike of luck and on the ability to apply distinctive strategies in which potential benefits are weighed against the risk of losing everything. A clever and skilful player may gain a lot of 'capital'.

191 The *mbao* game is also known as Kalaha. Two players sit opposite each other in front of a wooden board with two rows of holes. Each player has some thirty small balls distributed into the holes and which are moved by the players from one hole to another in a way that either leads to an accumulation of balls, and the eventual winning of the game, or to a loss of the balls and of the game.

However, the situation can change dramatically within a short time. A person having relatively plentiful resources may lose everything in a few rounds. A person who looked destitute can score and the game continues. The important things then are, within the margins set by the constraining rules, the courage to get involved, the right timing, a bit of luck and God's blessing. Looked at from a close perspective, the rural economy works like the mbaao game. (Seppälä, 1998, 18-9).

Seppälä's conclusion is that diversification may increase differentiation, i.e. allow a larger gap to emerge between the rich and the poor, however, within a diffuse class structure since most people are doing a variety of things and most of them have land. Diversification, however, also holds a scope for enhanced social mobility that stems from the fact that the difference between the rich and the poor is often a matter of doing more or less of the same thing and that the difference between success and failure is often very small, as it is in the mbaao game (Seppälä, 1998, 134ff, 196ff).

Having said that, we must also take note of the fact that mobility from the very wealthy and very poor strata was found to be restricted. This observation constitutes a diversion from the model advocated by Netting. What have made these groups, and the wealthy one in particular, able to reproduce their conditions across generations and to form what we could describe as rather wealthy family dynasties on the mountain?

In the following Chapter we will look into this question. We will also discuss an obvious shortcoming of this Chapter, i.e. what is the situation of differentiation in an absolute sense? Is the gap between the rich and the poor increasing or decreasing? And what does economic liberalisation and diversification mean for economic differentiation and the situation of poor strata?

Consolidation or divergence in wealth? Trends in the colonial and postcolonial periods.

In this Chapter we will discuss further the picture of social differentiation and mobility that emerged in the preceding chapters. We will particularly look at the situation of the uppermost stratum in an attempt at explaining why this group has managed to consolidate its wealth during a period when criteria of wealth has shifted from cattle to land and from land to business and employment. Another line of inquiry concerns the reasons for the relative absence of a landless proletariat in Meru. A third question to be dealt with concerns the implications on inequality and poverty of the structural and macro-economic changes that have taken place in the 1990s.

Pre-colonial period: household inequalities and the role of cattle in wealth

Interviews with elderly Meru reveal that in the pre-colonial period, there were marked differences between families and households in the size of land they cultivated, in the number of cattle they herded and in the amount of labour they could mobilise.¹⁹² The most essential wealth indicator at the time for the colonial encounter was cattle. To accumulate livestock and particularly cattle was the major aim and ambition of every adult male. Cattle

192 We interviewed several 'wazee' on this topic, among them Abraham Sindato, Mbarare Ngweere and Naiman Iyawe.

were unevenly distributed, however. While many households had indirect access to cattle through different kinds of social networks and reciprocal arrangements, those owning large herds were a minority who through their economic and leadership positions were able to extend their families by marrying more women, accumulate resources like land and labour, and politically dominate their communities. A poor person was a person without cattle, one who was labouring for the rich in exchange for food.

Apart from raiding, the Meru barter traded with the Maasai for cattle, and with the Chaga with whom they had a long established exchange of goods and intermarriage (Luanda, 1986, 25 ff). They also traded with the Arabs, who in the 19th century penetrated the interior of East Africa and occasionally side-tracked to Meru from their caravan routes across the plains (see also Iliffe, 1979, 40ff, 68; and Spear, 1995). Elderly Meru tell about trade relations with Arab merchants as their fathers and grandfathers have told them. Such trade was not for every man to undertake, but was the privilege of leaders and men of power. The Meru supplied the Arabs with food, ivory, leopard skins and honey, and in turn received glass necklaces, brass arm wires and ornaments, and clothes. Also knives, iron axes, plates and occasionally guns were received.

Apart from the mentioned items, wealthy Meru also received through their trading connections iron tools that could be used to improve the production of the land. Tools came from the Arabs directly, and from the Chaga who had more advanced trade relations with the Arabs and were known for their blacksmith skills. From the Arabs the Meru got the *imbero*, a tool that was used like a panga. And from the Chaga they purchased iron axes in exchange for crops.¹⁹³ Being precious and scarce goods, tools acquired from trade remained in the hands of the leaders. They enabled wealthy families to clear and cultivate larger portions of land and to obtain a higher return to labour than did poorer families. While poor people cultivated small portions at a time, planting between bushes and trees, using wooden sticks and simple hoes, wealthy people cleared larger portions, manured their fields and gained higher yields. The poor often found themselves with insufficient food towards the end of the season, a circumstance which forced them to beg for food or to labour for the rich, the latter fre-

193 Interview Mzee Mbarare Ngweere and Mzee Abraham Sindato

quently managed to produce a surplus to barter for cattle or other items, or to hire labourers working for food.

The role of external factors in the making of inequality and the political unrest characterising the region during the decades before the colonial encounter shows that Meru was far from the egalitarian, stagnant and sealed off society that sometimes appear as descriptions of African pre-colonial societies.¹⁹⁴ Despite this fact, the impact of these external contacts was probably rather small and we should be careful in drawing too far-reaching conclusions from them as far as inequality in Meru is concerned. The Meru were neither slave raiders nor did others enslave them, and the area they inhabited was somewhat to the side of regular caravan routes. The commodity flow was probably too irregular and the surrounding political situation too unstable to allow a systematic accumulation of wealth to develop from the caravan trade or from the barter trade with neighbours.

The overall impression is that individual wealth during precolonial times, to the extent that it can be recapitulated at all, to a great extent was perishable and coincidental, and dependent on the amount of resources that could be mobilised within the kinship system and within the lifetime of an individual, as well on individual luck and courage. The continuous raiding for cattle by Meru warriors and the constant risk of losing one's herd to disease, drought or theft underlined the perishable nature of wealth and the fragility of surplus accumulation during this time.

In addition, the age set organisation fostering an ideology of equality, the subsistence oriented economy in which labour division and barter trade was limited, the small population and abundance of land, the focus on cattle rather than land as a source of wealth, as well as institutional arrangements of reciprocity and resource sharing, were factors that likely prevented the emergence of permanent stratification. Within this context there was nevertheless scope for some men to accumulate wealth and rise to power and status. Their position often stemmed from their success as warriors, cattle raiders or leaders.

The investments in the form of irrigation structures made by wealthy family heads towards the end of the 19th century may have indicated a shortage of land on the central mountain slopes and a change towards more last-

194 See for example the discussion in the introduction chapters in Maddox et al. (1996) and in Koponen (1988).

ing and inheritable economic differences. Colonial rule accelerated the importance of land as a wealth differentiator, particularly after 1920 when population growth rates picked up and competition for land increased. The introduction of money and the linking of producers to markets far beyond the borders of Meru meant that new avenues of wealth from cash crop farming were opening up. More than ever before, access to land for production of cash crops was a crucial element in the wealth accumulation of local households.

Entrepreneurs who pioneered these avenues sometimes found themselves at odds with the values and norms that were pillars of the pre-colonial society. Just as often, however, they increased their wealth not by rejecting the old but by drawing simultaneously on the moral order of the age-set and clan organisation. This flexibility in conduct and the simultaneous drawing for legitimacy on overlapping social institutions explains some of the success and consolidation of wealth that is typical of the uppermost stratum, the one we saw was subject to much less social mobility than other groups. We will come back to this aspect later in the chapter.

Colonial period, increasing inequality

As we demonstrated in Chapter Eight, towards the end of the colonial period a distinct group of farmers and church leaders had risen to a supreme position in wealth and political power. These leaders were to set the development agenda during the years ahead. As Christians, educated, with a Western life style and ideal, and with a business attitude in farming, they represented a break with the generation of polygamous men who founded their authority on seniority and their wealth on large numbers of wives and cattle. They ruled by their economic power gained from coffee and employment, and through their positions as leaders of the church, the coffee cooperative, and the formal administration. They extended their land holdings by acquiring new plots through different means whenever possible. In addition they cleared large areas on the plains for the commercial and mechanised production of food crops. They introduced high yielding dairy cows towards the end of the period, experimented with new crops and varieties and cultivation methods, several of which they picked up through their per-

sonal experience of being employed by or otherwise coming into contact with Europeans.

Compared to most Meru, the Christian coffee growers and church leaders were far ahead in terms of modernisation, knowledge and education. As demands for social services and infrastructure improvements increased, new means of income and opportunities for accumulation opened up. Also here, the farmers at the forefront of agricultural innovation took the lead as they turned part of their agricultural surplus into trade, construction or transport, buying trucks and buses, and thus enlarging their overall wealth (see, for example, Nelson, 1967). Business incomes, in turn, were poured into expanding land holdings or exploring a wider range of off-farm activities. Those with education gained access to superior posts within the administration, the church and the cooperative.

Another factor that contributed to elevate these leaders to wealth and power were the events associated with the Meru Land Case, described in Chapter Four. The land case activists formed the Meru Citizens Union (MCU), which rallied mass meetings at the Chief's place at Poli. The MCU challenged the colonial authority and voiced the popular discontent with the Chief's administration that was accused of siding with the British (Nelson, 1967; Spear, 1997). The leaders of MCU sprung from the educated elite of Christians, being the sons of the first converts and coffee growers. While many Meru had looked at Christianity with scepticism and only slowly were beginning to accept its message, the Land Case increased people's respect for the educated and Christian elite which was at the forefront of the struggle for land. In the years to come members of this elite rose to political and economic domination as they acquired leading posts in the new Native administration, the church and the cooperative, which were the institutions set to modernise Meru society.

Although leaders were recruited on the basis of personal qualifications, these institutions inevitably served as stepping-stones for their personal enrichment. In 1953, for example, the year when the new Native Authority was launched, the District Commissioner noted in his annual report the tendency by the council and the magistrates to act in the personal interest of strong leaders, a concern that was repeated in 1955 regarding the allocation of land in the Kingori area.¹⁹⁵

At the national level, developments in Meru after the mid-1950s coincided with a greater attendance by the colonial administration towards commercial oriented African farmers (Havnevik, 1993, 31). It was during this period that prominent coffee growers of West Meru joined the general quest for land on the plains. Their interest was not to gain land for grazing or subsistence farming, but for large-scale commercial farming. They came with tractors and hired labour, and they cleared land of a size and with a pace surpassing the cattle herders that had preceded them. Capital for tractors and farm inputs in most cases had been raised through loans from the bank and from their coffee farms and business activities. By 1955, eighteen African farmers in Arusha District were tractor owners.¹⁹⁶ Nine of them had purchased their machinery through the Government Loan Fund Scheme. In areas such as Musa/Kingóri/Sakila, holdings of 200-300 acres were established.¹⁹⁷ By 1958 the number of African tractor owners had increased to 50, about equally divided between Meru and Arusha.¹⁹⁸

As a consequence, large differences in the size of holdings on the plains resulted. Far from all households had the means or foresight to acquire lowland plots. Relatively large holdings were established in the Sanya corridor area encompassing the present villages of Kikatiti, Leguruki, Sakila and Kingóri, which were intended to harbour families evicted during the Meru Land Case. In 1953, the District Commissioner noted trends of land grabbing in this area and recommended that an executive board separated from the political control of the Native Council should deal with land matters to prevent the Council from acting in the interest of strong leaders.¹⁹⁹ In 1956, the Commissioner commented on the issue of land occupancy in the Kingóri area: "...those [families evicted from Ngare Nanyuki] for whom the land was originally developed have, through their own fault and that of their political 'leaders', now found themselves squeezed out by the pioneers."²⁰⁰

In his study of the Meru in the 1960s, Puritt identified three 'classes' of wealth in Meru society that largely overlapped with religious affiliation and

195 ADAR for 1953, undated, TNA 471/R.3/I.; and for 1955, 1/2/1956, TNA 471/R.3/I, 34.

196 ADAR for 1955, 1/2/1956, TNA 471/R.3/I.

197 ADAR for 1955, 1/2/1956, TNA 471/R.3/I.

198 ADAR for 1958, 24/1/1959, TNA 471/R.3/I.

199 ADAR for 1953, undated, TNA 471/R.3/I.

200 ADAR for 1955, 1/2/1956, TNA 471/R.3/I, 34.

educational level. At the top was an educated “bourgeoisie” of Christian coffee farmers, deriving its wealth from coffee, large cattle herds and commercial cultivation of maize, wheat and beans on the plains. Many of them owned buses, tractors and bars. They copied European life styles in clothing and manners, and in building modern blockhouses. Below them was a middle stratum of less wealthy but relatively educated people. At the bottom were the uneducated and the pagan who as yet had not been able to take advantage of the income opportunities brought with colonial rule (Puritt, 1970, 182ff; Puritt, 1977, 135).

Puritt was reading into these inequalities a process of rural class formation, which he feared would tear apart Meru society. In this respect, he welcomed the changes brought about by the socialist government, hoping that it would contain differentiation (Puritt, 1970; Puritt, 1977, 135-6). He observed the land accumulation behaviour of farmers in the first group, who were enlarging their own coffee plantations at the expense of less fortunate relatives (Puritt, 1970). When we interviewed these prominent coffee farmers and their sons in 1997, they told us how they and their fathers often had purchased land in bits and pieces in the 1950s and 1960s by providing neighbours and relatives with cattle and small livestock. In those days, many people considered cattle a more important sign of wealth than land. Small livestock were essential social items frequently used in ceremonies in connection with childbirth, weddings and funerals. While in the old days, such provisions of livestock often resulted in labour obligations for members of the receiving household, the coffee farmers increasingly demanded land as payment.

The obvious question to ask in this context is to what extent the development model of Independent Tanzania, especially as it emerged after the Arusha Declaration in 1967, did away with the trends of growing inequality that Nyerere and other leading politicians identified as the legacy of the colonial period.

Ujamaa – the road to (in)equality

As argued by Kelsall (1998a, 13), the Arusha Declaration to an extent put a lid on processes of economic differentiation in the 1970s. Under the policies

of Ujamaa, land became harder to buy and sell and the hiring of labour was made more difficult. And the Leadership Code of the party forced the elite to choose between business and politics.

The launching by the government of free primary education and improved access to post-primary schooling, health care, water provision, and so on, were the perhaps most efficient measures in terms of increasing living standards and reducing inequality. This was especially the case for poorer families, and for girls, who before independence had been much discriminated against, but who thereafter became enrolled in education regardless of the income of their parents. With improved education and expansion of the public sector, incomes spread across social strata. Also women gained access to formal employment during this time, particularly in the health and education sectors, a process that started in West Meru villages and then spread to other places on the mountain. Hence, general education contributed towards upward social mobility and had a levelling effect on differentiation, both generally and with respect to gender.

In most other respects, however, the local inequality reducing impact of the central government's policy was much less obvious, as we will see in the following. Up to the Arusha Declaration, the close association between leaders of the Meru District Council (the former Native Council), the church and the cooperative provided a platform for political power, patronage and wealth. In fact, the personal enrichment from these sources was one of the reasons why the government dissolved the farmer cooperatives and reshaped the local administration to serve as an instrument for political mobilisation of the peasantry. Following the Arusha Declaration, the TANU/CCM party extended its influence at all administrative levels down to subvillage level. During the 1970s and 1980s it played a central role in community affairs.

While these measures undoubtedly closed off some channels of wealth and forms of patronage, it is our contention that they did not prevent the wealthy farmers from continued accumulation or lead to a redistribution of assets. We argue that the strategies of the wealthy group simply changed in accordance with the new rules of the game. Wealthy farmers formed new political alliances and networks that could secure their continued incomes and political influence.

Throughout this period and beyond, the traditional authority structures constituted additional channels through which influential persons could

execute power. So did the church and the cooperative. Consequently, to this day in Meru there are several parallel or overlapping layers of authority and institutions, on which influential persons can draw for legitimacy and for seeking support (Kelsall, 1998a, 3ff; Puritt, 1970, 73,180,189).²⁰¹

In a study from the late 1960s of development in Meru, for example, Vaa (1976) found that leadership in both traditional and modern institutions to a great extent was vested in the same persons. A tendency of elitism was observed, based on the finding that relatively few people held important leadership functions. However, Vaa's conclusion was that elitism was contained by the sheer number of leadership functions to be distributed and by the fact that leaders did not belong to any group that was socially or economically distinct. Leaders had somewhat larger plots and were better educated than ordinary farmers but not exceptionally so. Trust and oral talent rather than material wealth constituted grounds for leaders' appointments (see also Puritt, 1970, 178-80; and Vaa, 1976, 289-9).

It should be noted that Vaa did her study nearly 30 years ago at a time when popular confidence in the Ujamaa administration was particularly strong. In the 1990s, we found that leadership positions were concentrated to wealthiest groups (four and five), perhaps because the personal characteristics that makes a leader are similar to those that make some individuals explore possibilities and resources that lead to material wealth. We found that the association between wealth and leadership is stronger the more high ranking and important is the political or leadership position. Puritt observed in the 1960s that wealth was one of the characteristics (among others) that rendered a leader the respect of all people (Puritt, 1970, 178). At the same time it should be emphasised that not all wealthy people are leaders.

What should be clear, however, is the large extent to which wealthy farmers are able to exercise influence in traditional and church institutions and at various levels in the formal administration. This may be done directly by such persons themselves being leaders, or indirectly by their having access to information and through networking and lobbying at various political levels. The close connection between power and wealth has been demonstrated by, among other, Sara Berry (1993), as we referred to in Chapter Thirteen. In the following, we will give further evidence to the proposition that exer-

201 The overlapping of several institutional systems has several implications. Kelsall, for example, argues that it tends to make collective action and organisation more difficult.

cising leadership and political influence is part of a strategy that wealthy farmers pursue in order to maintain or increase their wealth.

When the Ujamaa ideology was introduced in mid-1960s, many of the wealthy farmers and local leaders paid lip service to the new political directives. Unofficially and privately, however, their actions were often contrary to the prescribed ideology. In the previous chapters, we have provided evidence of the strategies pursued by this group under Ujamaa and the economic crisis that followed in its wake. Parallel marketing and cross-border trade with Kenya were such examples (see Chapter Ten). A general problem in the implementation of Ujamaa was the fact that all external resources and extension directed to villages had to pass through and were dependent on the active cooperation of the local elite. As demonstrated in a number of studies this condition often produced results opposite to those intended by the reforms (see, for example, contributions by Loiske, 1995; Raikes, 1982; Saul, 1972; Sender and Smith, 1990; Smith, 1980; van Hekken and van Velzen, 1972; and van Velzen, 1973). Below, we will demonstrate how the wealthy group continued to accumulate land and consolidate their position under Ujamaa, while for the majority of households the unfolding economic crisis brought increasing hardships.

Consolidation of land holdings under Ujamaa

On the plains some villages were drawn into the 'villagisation' while others were only marginally affected, or not at all. When looking into this process, the policy of equality in land ownership proved to be highly inconsistent and flexible in outcome. In some areas, village centres were created, and 'landless' youth from the mountain or workers from the surrounding estates were allocated one-acre household plots and access to communal fields. Some people who had cleared holdings near planned village centres saw their land being confiscated and divided, while those with holdings further away remained unaffected. This was the case regardless of the size of their initial holdings.²⁰²

202 Interviews with farmers and leaders in Kikwe and Karangai villages.

A few prominent farmers with exceptionally large holdings to the south of the mountain remained with their land undivided in spite of reallocations taking place nearby. The location of village centres followed prior or 'spontaneous' settlements and was also determined by the proximity to roads and water. In addition, holdings with permanent structures (cement buildings or drilled wells) were generally not interfered with. However, the seemingly ad-hoc pattern by which some of the land allocations occurred indirectly point at other factors at play as well. While some landowners having their land confiscated received compensation in the form of land elsewhere, others did not. The political influence of large landowners, and their significance as producers, is likely to have influenced the exclusion of their land in the campaigns.²⁰³ While most large landowners officially supported the current political ideology and villagisation, many were privately sceptical. A few, like the former MP and freedom fighter Kirilo Japhet, took a critical stand and lost his political position.²⁰⁴

While villagisation south of the mountain in reality exempted several large landowners, the official position of the government was firm. This is shown by the exclusion in 1975 of two prominent Meru fellows from their political representation.²⁰⁵ The presence of 'capitalistic' farmers in the upper ranks of TANU was declared incompatible with the Leadership Code, and the owners were consequently excluded from their political offices. Their land holdings, however, remained intact.

The allocation of land by the government to Meru farmers on the drought prone Sanya plains west of Kilimanjaro International Airport in 1974, provides another illustrative example of the practical content of the government's policy of counteracting capitalist farming and organising pro-

203 It is noteworthy that the settler estates, representing the most unequal distribution of land in Arumeru, were not reclaimed under Ujamaa. See also Chapter Four.

204 Source: Interview Kirilo Japhet 1995, interviews with other land owners and former TANU members, some of whom in retrospect expressed strong critical views on the villagisation experience. See also next footnote.

205 Mr Sangito Luka, a foreground character in the formation of the coffee cooperative and one of the first Meru farmers to buy a tractor, was excluded from the National Executive Committee of TANU. Also, the Meru Member of Parliament (MP), Mr Kirilo Japhet, a local hero in the Meru Land Case, was excluded from parliament. Both exclusions were made on allegations of 'landlordism' which was declared incompatible with the Leadership Code. Sources: Daily News (10th June, 1975); Interview Kirilo Japhet 1995, Sangito Luka 1996.

duction on a communal or collective basis. On paper, land was allocated to the needy for collective production. In reality, however, the land allocations increased the holdings of already wealthy landowners. Farmers from the mountain looking for supplementary land were allocated 20-acre shares by groups of ten, each group being responsible for the joint cultivation of 200 acres. Among those who were given the responsibility to mobilise and enrol candidates for the groups were the same resourceful and large-scale farmers we described earlier. In the preceding decade, they had started to clear land in the neighbourhood, but encountered conflicts with Maasai who used the land for pasture. In an attempt to solve these conflicts, the government launched a cultivation scheme around the newly constructed airport and reserved areas for grazing further to the south. The scheme involved only land for cultivation, not for settlement.²⁰⁶

In several cases, the farmers concerned listed poor people and relatives from their home villages as potential candidates for the new scheme, well aware that the latter had no resources to maintain cultivation in such a dry area without proper transport, water, machinery, and other inputs. While the allocation and registration of plots officially conformed with the current ideology of equality, in reality holdings of hundreds of acres were added to the already substantial assets of a small elite of farmers, oriented towards the commercial cultivation of maize, beans, and seed beans for foreign companies. Since 1974, their holdings in this area have been consolidated by virtue of user rights, and in some cases have been extended as they have bought out minor owners. The land distribution in this area in 1996 is given in Table 18.1.²⁰⁷

Table 18.1: *Land distribution Kilimanjaro Airport area, Malula village, 1996.**

Land size	- 50 acres	51-100 acres	200 acres	400 - acres	Total
No. of owners	7	12	12	2	33

*Source: Records at Village Office, Malula. Columns reflect the fact that no landowners were reported in the intervals between 100 and 200 acres and 200-400 acres.

206 Interviews with land owners and village leaders in Malula village.

207 Interviews with Malula land owners and village leaders at Malula village office.

Land accumulation today

The current struggle by Singisi farmers to win back the so-called Madiira estate, presently owned by the government as part of the Tengeru Horticultural Institute, clearly shows that land acquisition today is a matter of both wealth and of ability to exercise political influence beyond village level.

The land presently contested concerns some 200 acres located within the border of Singisi village between the main road and the village office (for details, see Map 3.1, Chapter Three). The land case is an old one and has passed several phases of land reclamation since Independence. In the mid 1960s a group led by prominent farmers in the village successfully managed to reclaim a minor portion of the western part of the estate and was awarded individual portions in the area as a result. A reading of the list of group members is telling evidence of the fact that those in the forefront of land reclamation and expansion were village leaders and farmers of the wealthiest group. In 1967, the government purchased the entire estate and granted some additional 20 acres to the village along the western bank of the Tengeru River. Again, in 1975, it allocated additional land to the village for housing the village headquarters, the CCM office, and the premises and land of newly formed women's cooperative.²⁰⁸

The major part of the estate, however, remained under the government's Horticultural Institute in Tengeru. Over the years, the land and the coffee planted thereon were neglected in spite of the tremendous land pressure in the area. In 1990, some 50-60 Singisi farmers formed *the Singisi Agricultural Development Union (SADU)* with the purpose of reclaiming the land for more productive purposes. Also in this case group members belong to the upper wealth strata, many of them being leaders in the formal administration, the church, and traditional institutions. Individual contributions had in 1998 amounted to 100,000 TSh or more, a sum that effectively had excluded the participation of most villagers. Group leaders have lobbied extensively at all political levels, from the District and Regional Commissioners to the MP, the Minister of Lands, and finally, the State House.²⁰⁹

In 1996/97 other contestants to the land appeared in the form of the village government, the Coffee Cooperative Society, and the women's cooper-

208 These background events have been reported by Mzee Jeremiah Philipo and Mzee Tito Sekere. See also Map of Singisi in Chapter Three.

ative, but they were subsequently ruled out. A faction within the village government wanted to reserve the area for communal development and was advocating a more equitable distribution of land involving all villagers. For some time, this request threatened to create an open split within the village council since some council members were also members of the SADU group. The fact that the central government would not release the land for free made the position of the village council a weak one, however, and opened for a compromise. In 1997, the group of private farmers was given the official backing of the council to use the village stamp in its documents and to pursue the reclamation as a matter of concern for the entire village. This was on the agreement that a minor portion of the land was to be reserved for public purposes.²¹⁰ In October 1998, the President, Mr B. Mkapa, on his tour to Arumeru District officially announced the return of the land to the village (Daily News, 7th October, 1998). In 1999, the president cancelled the title deed of the estate and the surveying was completed in 2000. Before distribution, the land will be evaluated and procedures agreed on as regards the allocation and price of the plots.²¹¹

Numerous examples of land acquisition in which wealth and political leadership are closely connected were documented in the course of this study. Ideological concerns of equal land distribution were for example ruled out when in the 1980s, a settler surrendered his land in southern Nshupu village and wealthy villagers moved in to parcel the land between themselves.²¹²

209 Interview with the group secretary Mzee Tito (Tawari) Sekere, who reported the development of the case on several occasions between 1995 and 1998. Complementary interviews were done with other group members.

210 These developments build on interviews with village chairman Mzee Noe Lerei and others.

211 By the time of writing up this manuscript the outcome of land distributions of the Madiira Estate was not known. All in all, the president cancelled the titles of eleven estates, most of them located in the drier areas of the district. The total surveying cost was estimated to nearly 30 Million TSh to be recovered from the allocations. Apart from the Madiira estate, an additional 300 acres were revoked in or near the coffee belt in order to allow for expansion of Tengeru and Usa River townships from land belonging to the Arusha Duluti Coffee Estate and Farms 78 & 79, respectively. Sources: Madiira Estate files at the District Headquarters, Arumeru.

212 This refers to the part of Nshupu village known as Jua Kali and previously owned by an Indian settler named Patel. Interviews with involved farmers in Kirima subvillage, Nshupu.

Other examples concern land allocations near the national forest reserve surrounding the mountain peak. In places where the planted forest has been harvested, the Forest Department commonly allocates portions of land on a tenancy basis to local farmers who use it for food crops for some five to six years or until new trees have reached sufficient height. In one village visited the allocation of plots was organised by the village government on the basis that the land should go to those most in need. This was in theory. In reality, wealthy farmers bypassed the village government, paid a sum of money to the foresters and village leaders, and laid claim on several acres for themselves.²¹³

Crises and diversification

The deep economic crisis that evolved from the end of 1970s affected different households in different ways. As we have seen, some farmers from the first wealth group managed to maintain, and even increase their land assets, in spite of an explicit government policy to counteract landlordism and in spite of a growing population pressure that caused many households to subdivide their land.

Also in other respects did wealthy farmers negotiate the years of crisis rather well, acting as patrons of poorer relatives and neighbours who provided cheap labour. The local wealthy, in their turn, were clients of higher-ranking patrons through whom they could seek out business connections, exercise political influence, get access to scarce consumer goods or negotiate positions for their educated sons. Recurrent shortages of food at official prices in nearby regions made sales and transport of staple foods profitable on parallel markets, as did the storage of grains. In general, well-off farmers had better access than most people to farm inputs like fertiliser, seeds, and

213 Information comes from several interview sources, and from transect walks where actual land allocations were pointed out. It should be said that the situation varied between villages. While in one village, the council was compromised, in another village it showed much more integrity and independence regarding the allocation of forest plots. In a third village, the local council did not interfere in the allocation of land. In this case, individual farmers dealt directly with the foresters and were allocated plots according to their financial capacity.

particularly transport, thus being able to keep up production levels and market their crops during most years.

For some, the proximity to Kenya, and to Arusha, the gateway for international tourism in northern Tanzania, offered opportunities for parallel dollar exchange, and for trade across officially closed borders, circumstances that in some cases contributed to considerable fortunes being built by business oriented Meru. Such fortunes were subsequently invested in land on the mountain, or in real estate and business in for example Arusha town or in Dar es Salaam. Thus, the diversification strategy pursued by wealthy farmers before and under Ujamaa, protected them from the worst effects of the crisis and in some cases contributed to increase their wealth.

Those wealthy farmers who had used their coffee incomes to give their children education could later benefit from an enlarged network of beneficiaries as their sons after independence gained access to high posts within the administration or parastatal companies. While the economic crisis eroded the purchase power of salaried incomes for most civil servants and industrial workers, this group suffered much less due to their access to fringe benefits or payments in external currency. Among the wealthiest household heads in Singisi in the 1990s were retired lineage elders receiving remittances from sons with well paid salaried employment outside Meru. It is not uncommon for such absent sons to purchase land on the mountain as a form of investment for the future.

In contrast, as the crisis grew deeper, the majority of households faced mounting difficulties. Young households that had inherited fragmented plots or depended on wage labour, for example in Arusha, found it difficult to raise sufficient cash incomes. Donor assistance in the fields of primary education and health could not prevent schools and hospitals to suffer from a critical lack of replenishments, equipment, and means to pay the staff. In the 1980s, a severe shortage of basic consumer goods emerged.

As the economic difficulties of the state controlled cooperatives became critical, payments were often delayed, a problem that continued also after the reinstallation of the then bankrupt cooperative unions in 1984. In addition, the overhead costs claimed by the Coffee Board and NMC further reduced the incomes of farmers. It is difficult to see any local inequality reducing effects of these developments. Those who suffered most from the inadequacies of the state run coops, were in fact middle and poor farmers. Bet-

ter-off farmers had generally larger margins against payment delays, or could raise inputs or commodities through other channels.

Declining real incomes from coffee and formal employment probably increased the circular migration of young and adult males during this time. Many did petty trading across the Kenyan border. Another general trend during much of this period, in response to declining local opportunities of earning cash income, seems to have been a partial resort to subsistence farming, and for the poor, an increased dependence on wealthier relatives for food and land in exchange for labour.

A study by Sender and Smith (1990) in the Pare Mountains in the 1980s, an area not too dissimilar to that of Meru, concluded that inequality increased as the crisis grew deeper. Wealthy farmers were able to increase their holdings and diversify into parallel markets. Poor households, however, suffered from the combined effects of land shortage and lack of income opportunities, the latter stemming from the economic crisis. Increasing poverty, declining incomes, a return to subsistence farming, and increased outmigration were the results (ibid, 1990). Proximity to Arusha left Meru households in a somewhat better position than that of Pare. Still, the overall pattern is similar. The crisis struck differently. The main losers were those who had little land at the outset and who partly depended on wage labour for their livelihood. Moreover, with the erosion of public sector services, scarcity of consumer goods and few available sources from which to make extra money, per capita incomes declined and a fall in living standards was inevitable.

Inequality, polarisation and the moral economy of the peasantry

Also Spear notes the frictions and divisions that cut across Meru society following its integration into markets and external political and cultural systems. While a growing disparity in income and wealth seemed to be an effect of this integration, he is cautious about interpreting its long-term consequences. With reference to the rise of the educated and Christian group of coffee farmers, Spear comments that it would be a mistake to treat these developments as “...*a wholesale rejection of old values for new*”. Like the generation before them, the Christian coffee farmers “...*respected age, and as*

church elders they gathered large flocks of dependants around them. They valued large families; relied on their families for household production; and inaugurated family dynasties whose modern cement houses were clustered on the family's kihamba or engisaka. They also valued ancestral land and fought hard to retain it." (Spear, 1995, 159).

Although, the coffee farmers in many ways acted like capitalist farmers, for example by accumulating land and employing labourers for their farm operations, especially on the plains, in other respects they shared values and norms that made them part of the old society and of a local network involving neighbours and relatives. For example, many of them held herds of cattle on the plains and used them for social networking and for ceremonies in accordance with tradition. And up to the 1980s, coffee picking was frequently organised as working parties involving relatives and neighbours going from farm to farm. For most tasks, household labour continued to constitute a key labour force complemented with a cadre of workers hired at the peak season, many of whom were poorer relatives working not for wages but for food or other items. But this, as we have seen, was not a new phenomenon. Poor people had worked for wealthy relatives also during pre-colonial times.

Perhaps, the most important observation is that the rise to wealth and power of this group of largely commercial oriented farmers in the 1950s has not implied a corresponding commercialisation of land and labour in the sense that most economists would read into the term. Contracting labour always involves a social or cultural dimension. This is all the more so when the labour comes from one's own kin or village. Although, migrant labourers nowadays have come to form a substantial part of wealthy farmers' labour force, especially on the plains, and cash rather than kind is demanded as payment, kin and village labourers have since pre-colonial times constituted a steady and reliable source of labour for wealthy people, an arrangement that can be described as a social contract involving obligations and loyalties for both parties.

In the same way, also prosperous coffee farmers of the 1960s acknowledged the deeply rooted right to land for all heirs, and like the elders preceding them they too subdivided their holdings as sons reached marriage age, thus preventing accumulation of land to consolidate across generations. While, on the one hand, they increased their holdings and their wealth by

taking advantage of their ignorant or poor relatives, on the other, by paying respect to the moral code that stipulated that every person was entitled to land for subsistence, they never rendered their kinsmen or neighbours destitute. In no case did land transactions during this time imply the total alienation of land on the side of the seller, since this would have meant breaking the most fundamental organising principle of society, that of every family's right to land. Hence, by complying with the 'moral economy of the old society', their strategy of accumulation and wealth was made socially acceptable. Without compromising their wealth, they could become respected leaders and patrons gathering loyal clients around them in an arrangement that had advantages for both parties.

This is not to say that the transformation of Meru society has been a harmonious or conflict free process. On the contrary, it has contained a lot of tension and conflict between generations, between Christians and pagans, between the adopters of Western values and those respecting tradition, between the wealthy and the poor, between men and women, between West and East Meru, and so on. Tensions were temporarily buried when confronted with a common enemy during the Meru Land Case, but erupted openly in the form of religious clashes in the early 1990s in the wake of economic crises and apparent disparities in wealth and resources.²¹⁴ These frictions and tensions, however, do not lend themselves to a simple class analysis. Socially, economically and politically, tensions were not clear-cut but blurred and with stakeholders referring to overlapping value systems.

Although land ownership towards the end of colonial rule and beyond has been skewed, two factors have prevented its monopolisation by the wealthy group of coffee growers, entrepreneurs and leaders. The first one is customary land tenure as discussed above. The other was the opening of the land frontier on the plains in the 1950s. Up to present, the plains have offered relief to land-squeezed families on the mountain. Some of those who have failed to adapt to the changes that followed from colonial rule and shortage of land, have shifted permanently to the plains for the option of obtaining more land there or for herding cattle, while transferring their plots on the mountain to brothers or wealthier relatives.

214 For a discussion of these aspects, see for example Baroin (1996) and especially Kelsall (1998a;1998b). Accounts of differentiation and social tension are also found in Nelson (1967), Puritt (1970) and Spear (1997).

Hence, the moral economy and customary tenure provides a major explanation to why a polarisation of land holdings has failed to come about in spite of an extensive integration into the formal economy as regards farmers' sources of livelihood. In contrast to Hydé (1983), whose 'economy of affection' is seen as an obstacle to development (see Chapter Two), past records in Meru in terms of agricultural performance and distribution of benefits show that the horizontal networks typical of smallholder societies hitherto have been compatible with agricultural and economic growth and that the major impediments to development must be sought elsewhere.

We should also take note of the fact that by the 1960s, the majority of farmers on the mountain had come to realise the value of their land and the income that could be made from coffee farming. Although they never reached the level of incomes gained by the pioneers, coffee earnings improved their standard of living and enabled them to stay with their small farms without resorting to complementary wage labour for their more wealthy relatives or having to sell off their family inheritance in order to meet social obligations. During the last two decades, dairy farming has provided additional means for preservation of the family farm.

Since the time for the adoption of coffee cultivation and graded dairy cows, to remain on increasingly fragmented farms means that substantial sacrifices have to be made by many households. It has stretched the labour requirements of family members to the utmost, particularly for women, and also increased the need to draw on complementary incomes from off-farm sources. To most people, this has been an acceptable price, since the alternative, a total alienation from land, is socially and emotionally unimaginable. Even a fraction of a holding, barely sufficient to build a house, gives a person a social lifeline, an identity and sense of belonging, which he or she goes to great lengths in defending.

Current trends

Past developments in Meru raise questions as to the current inequality effects of economic liberalisation and Structural Adjustment, especially in light of the growing competition for land due to population pressure. The inequality effects of Structural Adjustment, and in its wake economic liber-

alisation, are debated, to say the least. A common theme in the critique against this form of external intervention is that it has been particularly harsh on vulnerable groups such as women and urban poor, and that it has aggravated economic inequalities between men and women, between urban and rural dwellers, between regions, and between peasant producers (see, for example, Bagachwa et al., 1995; Commander, 1989; Meeskoub, 1996; Sparr, 1994).

The great number of discussions we had with informants in connection to the wealth ranking exercises gave consistent indications as to a growing gap in incomes and other resources between the poor and the rich as compared to the situation before the economic liberalisation. A frequent answer given by young people to this situation is land fragmentation. This process is not linked to liberalisation as such but rather indicates the frustration and strong emotions that young people feel about the small size of the land they have inherited.

Growing inequality, however, is also seen to derive from the contrasting ability of different households to handle the situation of land shortage and a free market. Young households have been rather successful in drawing incomes from off-farm sources, as we demonstrated in Chapter Eleven and Sixteen. Skilled or lucky individuals have managed to climb the social ladder by making quick and conspicuous incomes from business, notably with gemstones. Others, however, have ended up poor, wasting their savings and resources on drinking or on the purchase of fashionable consumer goods. Such examples illustrate the constantly changing pattern of individuals' positions within a stratified society, in which social mobility probably has increased with the number of income opportunities offered.

Also for the already wealthy and for their descendants today's situation has meant increased opportunities for boosting incomes from off-farm sources. Interviews during the rankings indicate that the scale and range of off-farm operations and the fallback options in the form of landed resources, education and family networks, are factors that make rich people earn more money than everybody else and which also prevent them from sliding down the social ladder.

While farmers in wealth group one still hold considerable land resources on the plains, and in some cases have expanded further into Maasai land, they frequently invest also in transport, real estate, and trade, responding to

the opportunities of the free market. As we demonstrated in Chapter Fourteen, off-farm incomes play a larger role for the reproduction of this group than they do for the middle wealth groups. The wealthy educate their sons and daughters in order to ensure a continued basis for high off-farm incomes. Another strategy by households in this group, and their sons, is to use business and farming capital to accumulate land on the mountain and elsewhere, continuing the strategy of the emergent coffee farmers of the 50s and 60s.

It is more difficult to point at factors explaining the limited upward mobility of the poorest strata. Small landed resources combined with low education and dependence on casual labour of both parents and children may be among the unfavourable conditions that restrain upward social mobility.

While the indicators of growing economic inequality are rather consistent, the picture is more complex regarding changes in the absolute welfare situation of the poorest groups. Here interviews with the poor give a less consistent picture than most of the literature, which implicitly seems to assume that poverty automatically increases, and gender relations get worse, with growing inequality between households (see also Chapter Fourteen). While some poor people state that their situation has become worse as a result of age or sickness, others conclude their situation to be better today than during the years of the crisis with respect to basic needs. The difference is the greater ease with which they today can acquire incomes from petty business or farm labour, and the greater availability at the market of the necessities they demand. In addition, the real price of food staples has declined in the 1990s, as we described in Chapter Ten, giving further evidence to the hypothesis that the situation of the poor group has improved as a result of economic liberalisation.

Although, information from the poor as to their own situation is quite valid, it is difficult to evaluate and interpret data that build on personal experiences over time, not the least because of the great heterogeneity of the poor as a group. This being said, the situation today appears to carry some possibilities that off-farm incomes to quite some extent have compensated for the shortage or loss of land for both middle range and poor households. We have no hard income or consumption expenditure data to support our proposition. The interviews we did with households and with social and development workers indicate that per capita incomes are rising and that pov-

erty is being reduced as a result of increasing opportunities for poor people to earn off-farm incomes. This observation is in accordance with the argument of Collier et al (1986) that we referred to in Chapter Fourteen, i.e. that poverty to a great extent is the result of constrained possibilities by groups or individuals of participating in the market. In this respect, economic liberalisation has meant a positive change with more people having a better access to more available goods and services than in the 1980s. With rising real incomes, more households can move above the poverty line regardless of the method by which poverty is measured.

Interviews we made in connection to the wealth rankings confirmed these suspicions. We learned that being poor today could not be compared with what it was like one or two generations ago. The ranking informants consistently pointed out that the life of poor people today is better than before and that they themselves would rather be poor today than during the time of their fathers. The major difference is the numerous income opportunities that today can help poor people overcome their condition. In the old days poor people depended on relatives and had to beg for food, now they stand a chance to improve their situation out of their own efforts.

The immediate reaction among poor male household heads when they were asked about their situation was one of frustration about the small size of their farm and the workload they have to put into making a livelihood. In this respect, the life of their parents looks almost idyllic and subsequent developments a change to the worse. However, the life of their parents was also characterised by illiteracy and ignorance and with very few livelihood alternatives to farming. Being poor in those days meant working for food or *pombe* and experiencing a life more difficult than that of poor people today. Apparently, there has been some progress also for this group.

A sub-group that possibly fits into this pattern are single women (widowed, divorced or non-married), who have left their families for an independent existence around local business centres. What is new here is not only the greater social acceptance of women living on their own, but most of all the improved opportunities for business activities and cash labouring that makes it possible for single women to form an independent livelihood.

If the positive indications vis-à-vis the poor also reflect a qualitative and long-lasting improvement in their situation is much less clear, however. Improvements may well be *conjunctural*, an effect of the fact that the economic

recession is over and economic growth has been reinstated, allowing some marginal benefits to trickle down to the poor. In most other respects, the poor remain marginalised, and with women being over-represented as household heads of poor families. The poor have less of everything: of production resources, education, access to health care, social services, housing, incomes, etc, and are on the whole non-participatory in village affairs.

Land transfers through sale in Singisi

Our documentation of land sales in Singisi 1997-2000 provides further evidence of the trends and pattern we have been discussing in this and previous chapters. Between January 1997 and October 1998, and January 1999 and October 2000, we recorded the particulars of what we believe were all, or nearly all, sales of land in Singisi, in total 74 cases. A rudimentary ranking was made of the buyers and sellers in order to compare them with the wealth positions of villagers in general. They were ranked into five wealth groups. It should be noted that some of these recordings were made after the fieldwork had been completed, meaning there was little room for a follow-up of the questions that this exercise gave rise to.²¹⁵

The typical seller of land is a rather poor but not a destitute person, slicing off a piece of his land to a clan member in wealth group five (the richest) in order to meet extraordinary expenses or, which is fairly common, raise the means for buying land elsewhere. The size of the land offered for sale is small, a quarter of an acre is typical, reflecting the overall shortage of land in the village. Prices vary considerably but are in general very high according to Tanzanian standards. The mean price per acre during this period was 1.7 Million Shillings (> 2,000 USD).

Land transactions typically involve members of the same clan, but there are exceptions to this rule. The most important ones are that external buyers seem to have entered the village and that women are appearing as both buyers and sellers of land. It was repeatedly stated by both clan elders and mem-

215 The recording and ranking was made by Mr Jonathan Iyawe, one of the research assistants. Thanks also to Ms Ellen Carlsson, a doctoral student at the Department of Economic History, Lund University, who during her own fieldwork in Arumeru, assisted in this data collection.

bers of the village government that non-Meru should be excluded from buying land in order to prevent local people from losing their inheritance. In 1998 and again in 2000, however, the 'power of money' compromised this rule and two outsiders were allowed to purchase land in the village on the basis of being married to Meru women, albeit at an extraordinary price (3.4 Million and 4.0 Million Shillings per acre). Whether these sales are isolated cases or indicate a trend in which the influence of clan elders is systematically undermined is difficult to tell, but the developments in neighbouring Patandi village, bordering Tengeru township, may provide some indication. Here, external businessmen are regularly buying land from smallholders with the consequence that house building replace coffee plantations as the township expands north of the main road. In these transactions both buyers and sellers use lawyers and bypass clan elders. This has been an increasing trend in the 1990s. In most other villages, however, clan elders continue to exercise a major influence over land transactions.

In four cases widows were selling a portion of their farm to clan members in order to raise money for school fees (3) and to buy a house plot in nearby Usa River township (1). And three single women had managed to raise sufficient income from off-farm sources so as to buy a plot to build a house in the village. For women, purchase is the most efficient way of securing control over land, but can only be managed by very few individuals.

In some cases rich people were recorded the sellers and poor people the buyers of land. These cases concerned exchanges of land. Somebody may sell land and then buy another plot elsewhere in the village, often nearer the homestead. Sometimes such transactions involve the buying of a cheaper piece of land than the one that was sold with the purpose of raising a capital for house building or business.

It is common to find people selling their small piece of land on the mountain in order to buy a larger holding on the plains where prices are lower, a measure that sometimes also involves a shift of residence. Exchanges of holdings amounted to about one third of all land sales recorded within this period (Table 18.2). About as many sell land in order to raise money for school fees, ceremonies or other purposes. The frequent selling of land for meeting school fees shows the importance that parents pay to their children's education. A small farm may be insufficient to provide heirs with a

livelihood from agriculture but when sliced off for sale it may still serve to educate children for occupations and incomes outside farming.

Another common reason for selling land is to raise money for house building (Table 18.2). Since the 1990s, building activities have been booming on the mountain and many people are trying to replace their mud houses with 'modern' block houses. To have a modern type of house is perhaps the most outward sign of progress and modernity in Meru and besides children's education, is a task that most people are prepared to work hard for. Many farmers in the villages bordering the townships are also involved in building 'lodges' or accommodation quarters for migrant workers, as we showed in Chapter Ten.

Table 18.2: *Reasons for selling land in Singisi 1997-2000.*

Reason	Buying land	Debt	Medical costs	Business	Building house	School-fees & other reasons	Total
No. of cases	23	4	4	3	12	28	74
Per centage	31	5	5	4	16	38	100

A few sell a piece of their land with the outright purpose of raising capital for business and about as many (or few) sell out of debt or for meeting medical costs (Table 18.2). What is perhaps surprising is the rather small proportion of household heads (about ten per cent) that sell land out of some kind of compulsion (indebtedness or high medical costs). Even if we consider that some of the households moving to the lowlands feel compelled to do so, the majority appears to sell land with the intention of gaining something that in the short or long term may improve their standard of living. In fact, the typical seller of land is not a person in wealth group one (the poorest) as one perhaps would expect but a person in wealth group two (40 per cent), followed by wealth group three (27 per cent). The poorest group only accounts for 20 per cent of the land sales. For the middle groups mentioned, raising money for school fees, house building and land exchange are the main reasons for selling land.

This contradicts the argument that increasing indebtedness and poverty are the main driving forces behind land sales, and that a landless proletariat is formed as rural households become integrated into markets. The pattern of land sales in Singisi does not provide evidence that already poor people

have become poorer as markets have liberalised in the 1990s. Rather, what we see are strategies pursued by households trying to adapt to the inevitable shortage of land caused by population growth. For many households in this situation, land has become less important as a means of *agricultural* income, a change that is particularly evident in the villages around Tengeru, including Singisi. Land has tremendous importance, however, as insurance capital and fallback for households whose livelihoods are becoming more and more oriented towards off-farm activities. With land prices rocketing, slicing off a portion of land for sale releases a capital that can be invested in the education of children, the building of a modern house, the boosting of a business enterprise or the establishment of a small farm for subsistence on the plains.

The gradual transformation of Singisi from an agricultural village into a residential area (an 'Arusha suburb') is further indicated by the pattern of land purchases. We did not record purchasers' reasons for buying land, but a reading of the names of the purchasers and the interviews we made with clan elders on the subject reveal that a large number of plots in Singisi are bought as 'investment' and for house building purposes. This represents a change from only a few decades back when rich coffee farmers bought land in order to increase agricultural production. Today, the buyers are frequently absent sons of wealthy villagers and, according to tradition, they are entitled to land from their clan. In one of the subvillages in Singisi the absentee sons of a clan leader have systematically purchased land from their relatives in the last couple of years. Ten of the recorded land purchases concerned this single family. The sons hold well salaried positions as lawyers and businessmen outside Meru. Buying land is seen as an investment and building a modern house will increase its value further. Also resident villagers buy land for much the similar reasons.

Concluding comments

Inequalities in land ownership developed in the colonial period, as population growth and cash crop farming made land a gradually scarce resource. In spite of an outright policy by the independent government to do away with rural inequality, and in spite of a notable progress in the social sectors, its overall impact seemed to have been at the best neutral, but was more like-

ly negative or counter-productive to the idea of economic equality. While some families in the recession that followed were able to consolidate or even increase their holdings, thus confirming the durability of their superior positions as they had emerged already in the colonial situation, the majority experienced difficulties that forced them to diversify incomes or resort to subsistence farming, in most cases without real gains in living standards.

While inequalities in incomes and assets appear to have become larger as a result of wealthier households' favoured access to landed and off-farm resources and their close association with the political and traditional leadership, the accumulation of this group has not resulted in the emergence of a landless class of dispossessed farmers. Wealthy farmers continue to be a part of the village culture and economy and since they often form part of the traditional leadership they too respect the rules of customary tenure, according to which all households are entitled to land for subsistence. In this way, they have managed to increase their wealth from the large networks and resources they are able to gain as leaders, patrons and entrepreneurs, yet without losing the respect of their fellow villagers. On the plains, the open land frontier is a source of accumulation for the wealthy, while at the same time, it provides subsistence for households on the mountain.

More recently, off-farm opportunities have meant additional sources of accumulation for the wealthy with an increasing gap of inequality and differentiation as a result. However, off-farm opportunities have also provided smallholders with the means by which they are able to continue to live on their farms. Despite a more acute shortage of land than ever before but thanks to the presence of off-farm income options, many households have managed to increase their standards of living in the last decade, albeit at the price of a constantly increasing workload, especially for women.

The declining real price for food staples and the pattern of land sales in Singisi give further evidence to the proposition that in the liberalisation period, poverty has been reduced and per capita incomes have increased. Land sales are made by middle ranged households, primarily, rather than by destitute ones, the main reasons being to raise capital for school-fees, house-building, or for buying land elsewhere. The main buyers of land are the wealthiest households. Their means of purchasing to a large extent derive from sources outside the mountain in the form of off-farm incomes or sons being employed in high salary positions. The strategy of their investments

reflects their awareness of that land in the future will increase in value. This circumstance renders the uppermost group a certain trait of durability that may help explain its limited downward mobility.

PART IV

Family farmers in
Meru
Concluding notes

Peasants without land or land without peasants? Family farming and diversification in Meru, Tanzania

Introduction

In this conclusive chapter we will in a summarised fashion discuss the findings that have surfaced in the course of the preceding chapters. We will also address some theoretical and developmental implications of these findings, generally and with respect to the Tanzanian situation.

Throughout the last century, the family farmers on Mount Meru have adapted to population growth and land shortage by intensifying agriculture, by drawing on resources from outside their home area and by integrating into the market. To a great extent agricultural intensification has been driven by population growth in accordance with the model outlined by Ester Boserup (1965) (Chapter Six and Eight). When land became short on the central mountain slopes towards the end of the 19th century, the Meru cleared new land on the lower and eastern slopes. This process was temporarily halted during German colonial rule but resumed after the First World War when the Meru claimed what pockets of virgin land remained on the mountain. As the land frontier definitely closed in the subsequent decades, following continued population growth and European land alienation, farmers first planted grazing lands on the mountain with annual crops and thereafter replaced fallowing by permanent cultivation. Cattle herds were

shifted to the plains and only a small number of milking cows were stalled in at the homestead. When additional land was made available on the plains towards the end of colonial rule, Meru households established additional farms there for annual crops, thus enlarging their overall agricultural resource base.

On the mountain, irrigation and improved tools were other means by which production per acre could increase and food needs be met in spite of a rapidly growing population. It was production for the market, however, that eventually pulled the Meru out of subsistence agriculture and which made them one of the most prosperous people in Tanzania at the time of independence. The most important means for this radical transformation was cultivation of coffee. Coffee was extremely suitable for the smallholder farming system that existed on the mountain and favourable prices in the post-war period contributed further to its rapid adoption. Towards the end of colonial rule an uninterrupted belt of coffee and bananas stretched across the middle and lower mountain slopes giving testimony to the importance of coffee as a means of livelihood and prosperity for the people on Mount Meru.

Hence, the market complemented and interacted with the agricultural intensification driven by population growth and allowed per capita incomes and living standards to increase beyond subsistence level. In this process, rising population densities constituted an important condition. The dense population facilitated the building of the physical infrastructure and the spreading of farm innovations. It also constituted a market for consumer goods and made possible a more elaborate division of labour and institutional organisation than would have been possible under more sparse population conditions.

The Meru also drew incomes from sources outside their farms, working during parts of the year for wages on settler estates or elsewhere. The experiences they had during such occasions had a catalysing effect on farm performance on the mountain. This was particularly the case for the Christian and educated elite of farmers who spearheaded social and economic development and who positioned themselves at the forefront of the political struggle for independence. The performance of this group of commercially oriented and politically influential farmers set examples for the rest of the smallholders.

In contrast to Boserup's model of endogenously generated agricultural change, however, farm innovations in Meru have largely taken place as a result of external contacts, albeit facilitated and conditioned by the need for agricultural intensification as population growth continued unabated. The introduction of irrigation, iron tools, ploughs, market crops, graded dairy cows, improved seed varieties, farm chemicals etc. came via external contacts stemming from market integration and from the diversified livelihoods (including off-farm incomes) that the Meru developed in response to the constraints and opportunities they were facing.

These developments largely comply with the model of induced agricultural innovation forwarded by Hayami and Ruttan (1971) (Chapter Six). According to this model, which is complementary to the one of Boserup, external agents respond to local demands for new techniques as the balance and relative factor costs between labour, land and other resources change under population growth and market demand. The agents that provided new techniques in Meru were to a great extent the leading and educated farmers who had come into contacts with missionaries and European settlers and whose farming methods they copied. They were also market middlemen and traders in crops and inputs, many of them of Asian origin. Towards the end of colonial rule, the coffee cooperative in Meru provided similar functions by introducing a range of technical innovations suitable for small-scale farmers. After independence, the state administration with its expanded agricultural extension system became the main executing agent of agricultural change and provider of farm inputs, i.e. a politically induced kind of change.

When land fragmentation and worsened terms of exchange made coffee production less profitable, the Meru increased their production of milk for the market from graded dairy cows, hence continuing to raise the output value from the land. This process started back in the 1960s but gained speed in the late 1980s when the demand for milk picked up in Arusha town. Jointly with dairy farming, cultivation of vegetables and bananas for the urban market constitutes the main avenues of farm intensification since the early 1990s, following economic liberalisation. The decline for coffee has continued during this decade and caused many farmers to uproot some of their coffee trees shifting land use from coffee to milk production (fodder grass) and above all to high value crops such as vegetables and bananas.

To a great extent household livelihoods in Meru comply with the peasant or smallholder definition we outlined in Chapter Two. Households depend on small farms and a variety of farm and off-farm incomes. The mixed farming system they practice is partly oriented towards production for the market and partly towards the self-provisioning of staple foods. Stability of income, a long-term perspective on production, and risk spreading rather than maximisation of yields is the preferred strategy. Household members constitute the main labour force, complemented by hired labour during parts of the year or for special tasks.

The flexible family labour force with respect to working hours, types of tasks and consumption level, the variety of income sources, the part self-provisioning of staple foods and, in the 1950s, the emergence of a progressive farmer cooperative organisation as well as favourable marketing and policy conditions for cash crop and food crop cultivation are among the factors that explain the relatively successful outcome of farm intensification in terms of household incomes and living standards in Meru. Despite a near tenfold increase in population size within the course of last century, developments in Meru deny the pessimistic outlook commonly advocated by neo-Malthusians in the 1980s regarding the adaptation capacity of rural societies to rapid population growth. The development in Meru also bears testimony to the competitiveness of family farming over other types of farms and renders credit to what we may call the Chayanovian model of agricultural development (Chapter Two). The Meru have competed successfully with settler and state farms in coffee production and dairy farming, in spite of the fact that the former from time to time enjoyed substantial state subsidies and other privileges under the pretext of being superior to indigenous forms of agriculture. And in spite of the national economic crisis in the 1980s followed by economic liberalisation, family farming continues to be the by far dominant organisational form of agricultural production on Mount Meru.

Between crisis and opportunity – predicaments of the Meru and African peasantry in the 1990s.

The above rather positive description is, however, not the full picture of post-independence developments on Mount Meru. Since the late 1980s, new constraints and opportunities exercise pressures and invoke tensions and conflicts that, according to some observers, threaten to erode the economic basis and social fabric of peasant societies not only in Meru but also in many parts of Africa. The radical austerity measures under structural adjustment and economic liberalisation coupled with unprecedented demographic pressure have, accordingly, made the agricultural basis for economic life and social identity more difficult to fulfill. It is in this context that the term 'de-agrarianisation' has emerged as a synthesising concept for the multifaceted processes that imply that households and individuals turn their back on farming and explore more rewarding alternatives (Bryceson and Jamal, 1997). Consequently, what is new in Meru is not that household members draw incomes from off-farm work, since diversification has been there since early colonial rule, but that off-farm activities for an increasing number of households take precedence over agriculture and become the main source of income.

The quest for off-farm incomes is, however, not only driven by demographic and economic constraints but also by income opportunities and expectations of improved standards of living created by economic liberalisation. What is occurring is nothing less than a revolution of material aspirations, noted as a great demand for the kind of consumer goods that were unavailable during the years of deep economic crisis. The monetisation of the local economy is to some extent a result of the high demand for cash by households aspiring to raise their standards of living by acquiring consumer goods, changing into more expensive food habits, building new houses etc. And the common complaint by household members that everything has become very expensive in the last decade should be partly seen against the observation that life aspirations and consumption demands also have increased in the interim.

The quest for off-farm incomes is particularly strong among young household members. Not only are youths less endowed with land compared to the generations before them. The attitudes they express about farming

partly deny the somewhat romantic and perhaps overly optimistic view advocated by Netting (1993) that the smallholder condition at every instance is sustainable and has great attraction to all household members. To a large extent youths resent the values, the life styles, the drudgery and uncertain outcome of farmwork and the modest material life conditions of their parents. On average, the young are better educated than their parents are and, as a result hereof, they have a different perspective on life. Most parents have also realised the predicament of their children as regards farm based livelihoods. The great attention that they pay to their children's education makes sense in view of the tremendous land pressure that is expected in the years to come. The youth in their turn realise that their small holdings are grossly insufficient as a basis for the standard of living they aspire to, and hence they concentrate their time and effort on available alternatives, which in most cases mean various kinds of small business and self employment ventures. Most youth and young household heads draw incomes in the adjacent townships, in Arusha, and in the mining areas of Mererani and Semanjiro in the southern parts of Arumeru District.

The combination of low age, a small farm size, education above primary level and male sex provide strong propulsion towards off-farm types of livelihoods. The gender bias in off-farm work, however, is less pronounced than only a few decades ago. The great need for cash among households and the small land resources have on the one hand increased the labour burden more for women than for men but, on the other, also meant that women more often than before have become involved in small business activities and employment outside their homes, thus transgressing and putting into question the traditional gendered division of labour that confine women to the domestic sphere. We should also take note of the observation that not only a small farm size but also the opposite, a large holding, increases the likelihood for diversification. Many large-scale farmers are pluri-activists who have taken advantage of the income opportunities entailed in economic liberalisation.

Marginal peasant households

Based on the definition we introduced in Chapter Two, the ideal typical peasant household is a household which derives its *main* livelihood from agriculture, either for sale or own consumption (Ellis, 1993; Shanin, 1990). This is not to the exclusion of complementary incomes from other activities. A peasant-worker, a peasant-businessman, or other combinations, however, are cases where off-farm activities have taken precedence over farming, but where farming continues to form an important part of the households' livelihood and reproduction.

Generally, a high incidence of such 'marginal peasants', 'semi-peasants' or 'part-time farmers' indicates a high rate of market integration via diversified livelihoods. There is, however, no easy way by which the proportion of off-farm incomes can be measured in relation to farm incomes, or how self-provisioning relates to sale of food crops. The relationship between farm and off-farm activities will fluctuate over time depending on a variety of factors, some of which we discussed in Chapter Six and Seven. Consequently, a classification of Meru households with respect to income activity must necessarily be approximate.

An approximate indicator of the income orientation of the household is the statement by the head regarding *the most important cash income source of the household as a whole* (Chapter Ten). Two thirds of the households (65 %) consider sale of farm produce to be their main income source. Consequently, about one third (35 %) depends mainly on cash incomes from activities outside their farms (including remittances from children). The (partial) occurrence of food self-provisioning, however, can be assumed to reduce the overall dependence on external incomes for this group. Even so, the figure is indicative of both the crucial importance that off-farm incomes have for households in Meru today and of the large (and probably increasing) proportion of 'marginal peasants' or 'part-time farmers'.

For many households endowed with very small holdings, agriculture only serves as a complementary activity and yields a marginal although important income. Some observers would prefer to categorise this type of household as 'functionally landless' due to their generally very small holdings (Chapter Ten). It is noteworthy, however, that among households with a farm size 0.5 acre or below and which rely on off-farm sources for most of their cash

income, nearly 80 per cent report complementary sales of farm produce. In spite of a very small farm size indeed, they generate a marketable surplus of staples such as milk that gives them a complement to the off-farm incomes on which they depend for most items. Although both a small farm size and off-farm incomes seem to have a positive impact on farm intensification, we must remember that the absolute level of production for these households is small and can only provide a complementary yet important source of income and subsistence.

It is important to note, however, that 'marginal' or 'part-time farmers' are not exclusively households deprived of landed resources. This group also contain better-off households with large holdings on the plains but which have broadened their income base to include employment or business activities that yield higher returns than farming (see later in this chapter).

The 'dissolution' of the peasantry?

On the basis of what we have presented in Part I and II, it should be quite apparent that the process of land fragmentation and the incidence of 'functional landlessness' is likely to continue and increase, hence increasing the proportion of households that are now marginalized from agriculture as the main source of income. However, it is not only producers that are short of land who diversify incomes. Also 'core peasants' and households well endowed with landed resources have often found that off-farm activities have become more attractive than farming as sources of income. As the agricultural sector contracts in comparison with the industrial or service sectors, the proportion of the rural population depending on agriculture in the sense of being 'ideal typical' or 'core' peasants is shrinking as a result. Their gradual replacement by 'marginal peasants' or 'part-time' family farmers, or their complete exodus from agriculture through urbanisation, is thus in line with the 'de-agrarianisation' thesis put forward by Bryceson (1997a; 2000). This process is in evidence all over Africa, although in the Mount Meru area, it may be more affected by population pressure than is the case elsewhere in Tanzania.

However, if by 'de-agrarianisation' is also meant 'de-peasantisation', i.e. the dissolution and replacement of the type of farming we have described as

peasant or family farming (e.g. a flexible and domestic labour force, flexible consumption as a basis of labour allocation, mix of income sources etc.) by other organisational forms of production (e.g. more specialised or business oriented farm enterprises), we are less convinced. According to Bryceson (2000, 2), de-peasantisation involves an erosion of the criteria defining rural producers as peasants, i.e. a livelihood based on partial subsistence farming, a social organisation based on family labour, a class distinction denoting their relative subordination to external markets and power holders, and their relative adherence to community based and conformist social values (see also Chapter Two). Following erosion of these criteria, what exactly are Africa's peasantries being transformed into?

The question is not easily answered since, as an analytical category, peasants are extremely elusive rendering definitions and border cases problematic. Raikes (2000, 68), for example, questions whether the diverse livelihoods displayed by rural producers in Africa are signs of 'de-peasantisation' or rather can be described as extended peasant survival strategies, especially since diversification does not seem to lead to a breakdown of essential kinship/locality networks. As long as parts of a family have some rural basis in farming, Raikes see them as remaining peasants (ibid, 68). As rightly noted by Bryceson (2000, 5), peasant transformations deny reference to a fixed formula and perhaps more than anything else are dependent on differences in "...*locality, context and human agency*.". With this reservation, Bryceson argues that historical evidence demonstrates that certain directions of peasant change are stronger than others, such as peasants being transformed into "...*capitalised family enterprises or industrial production units*..." (ibid, p.5).

In Chapter Two we argued in favour of an interpretation that bridges the conceptual contents of the terms 'peasant' and 'family' farming, which commonly refer to agricultural producers in developing and developed countries, respectively. Save for a teleological and evolutionary trait in the classical interpretation of peasant change, and save for the fact that peasant agriculture contains an element of self-provisioning and occurs in a context where markets are less developed, we see no fundamental difference between peasants and family farmers in the way they organise production and in the conditions under which they reproduce. In contrast to the capitalist or enterprise type of farm that depends on wage labour and requires profit in order to survive, the family (or peasant) farm is not constrained by such a con-

dition. Our historical review suggests that family farming on Mount Meru has been extremely adaptive to external conditions since the onset of colonial rule. Despite the political and economic favours forwarded by the state to the capitalist kind of farming practised by settlers and company estates, or to the collective and state forms of farming attempted under Ujamaa, family farming still constitutes the dominant form of agricultural production in Meru and in Tanzania.

The term 'capitalised family enterprise', in turn, leads one into thinking about the highly mechanised type of family farm seen in Europe and United States. The increase of this type of farm, however, is nowhere in evidence on Mount Meru. Although data is not all conclusive, today's situation may even be one of 'de-capitalisation', noted by the reduced utilisation by small farmers of purchased (capitalised) farm inputs (i.e. fertilisers, seeds, chemicals) following the worsened terms of production in the 1990s, particularly for staple crops such as maize, as this study indicates.

No doubt, Meru households have become less subsistence oriented and less reliant on agriculture in the course of the past decades. But this does not alter the fact that the vast bulk of agricultural production on the mountain is carried out on small family farms, under conditions where consumption concerns rather than profit concerns determine labour and resource allocation, where flexible household and kin members constitute the main form of labour, and where the farm unit, albeit in many cases reduced to a garden size, remains the centre of gravity of social and economic life and of a family whose members have become increasingly dispersed in geographic and livelihood terms.

The social and cultural dimension

For the people on Mount Meru, and for peasants generally, land represents an ultimate economic security and an option of subsistence farming as a last resort, whether real or imaginary. Land is, however, not only a source of income and subsistence. Attached to access to land are social and cultural values that serve as added explanations to why households rarely give up farming entirely. Land ownership is a common denominator for household members who are involved in activities that are very diverse in nature. The

family farm represents continuity, stability, social belonging and identity. Without land, a person is 'a nobody', a social outcast. Only in the case a person is highly educated and lives elsewhere may land on the mountain cease somewhat in importance. For the majority, however, land has immense social and emotional value. Despite the adverse feelings young household heads and youths commonly express towards the drudgery of manual farm-work, they are prepared to go to great lengths in claiming their right to a piece of land on the mountain although it may be too small for agriculture to provide the bulk of income needed. It is paradoxical that for many youths, a total detachment from the land is just as unattractive as is a life requiring hard agricultural work for a small and uncertain outcome.

In many ways, the Meru bear a resemblance with the ideal typical peasant society described by, for example, Wolf (1966) and Shanin (1988; 1990), with strong social bonds between community members and with traditional institutions still exercising influence on individual behaviour and resource allocation (Chapter Two). Labour, for example, is to a great extent mobilised on a kinship and neighbour basis, in spite of the fact that payment in money rather than in kind has become common in the 1990s. One of the most important institutions is the one stipulating the right to land for every male heir, leading to a far-reaching fragmentation of holdings for every generational shift of farming households. This institution has hitherto probably prevented the full-scale proletarianisation of part of the rural population but is crumbling under internal and external pressures that may erode its status in the future (Chapter One, Four and Eighteen).

'De-agrarianisation' and the preservation of family farming

While on the one hand a small farm size makes it necessary for households to explore off-farm options in order to raise incomes and living standards, we must also take note of the possibility that the incomes from such activities can enable them to retain their small farms on the other. The period of deep economic crisis that beset Tanzania in the 70s and 80s caused a gradual pauperisation of the rural population, partly from lack of employment and small business opportunities. With the economic liberalisation reforms, income opportunities outside agriculture have mushroomed and for many

people in Meru provided the means for surviving on miniature farms and even for increasing per capita incomes. Parallel to 'de-agrarianisation', a process that could be called 'agrarian adjustment' and implying the preservation and continuation of the family type of farming in the form of 'part-time farms' is perhaps as realistic a hypothesis as the dissolution of the peasantry thesis discussed earlier. It is worth noting that the part-time family farm is a common type of farm, not only in developing countries but also in Western and European countries such as Sweden (Djurfeldt, 1994).²¹⁶

Our data suggest that the off-farm occupation of the household head contributes positively to farm performance even in the case of small farms, provided the income generated is above a certain threshold level (Chapter Twelve). This supports the hypothesis that diversification serves as a means for preserving the family type of farming. Also a very small farm can support a milking cow when fodder is brought in from outside or generate a complementary income from a small banana grove or from an intensive cultivation of irrigated vegetables. And with land prices rocketing, also a small farm has a value as insurance capital that can be realised in times of need.

The preference among part-time farming households for self-employment and small business solutions, carried out as 'flexible specialisation', fits into this notion of a 'family mode of production', since one of its characteristics and competitive strengths is a flexible domestic labour force and the full or nearly full possibility of switching between different tasks and sources of income (Lipton, 1984; Chapter Two, Seven and Ten). In fact, by focussing on the flexibility of labour rather than on the type of activity, Lipton's concept 'the family mode of production' can be said to bridge some of today's disagreements over the peasantry in a situation where livelihoods have become increasingly diverse in nature. According to Lipton (1984), both small-scale farming and small business enterprises/self-employment of the kind seen among rural dwellers are just different sides of the same coin.

216 Djurfeldt (1994, p.136, 96) notes that in Europe and United States the parallel processes of specialisation/diversification have implied that some family farms have become heavily specialised and capitalised (mechanised) units while others continue to exist as part-time farms with household members drawing incomes from off-farm sources. In Sweden, for example, the relative share of total farmland held by part-time family farmers did not change within the period examined by Djurfeldt (*ibid*, 127ff), which was 1930-1985, a finding that gives testimony to the persistence of (part-time) family farming across quite diverging political and economic contexts.

In short, what we are observing in Meru (and in many other parts of Tanzania and Africa) is a process by which some household members leave agriculture altogether by migrating to urban areas or by taking up specialised kinds of off-farm occupations (Chapter Five and Eleven). In the Meru case, 'de-agrarianisation' foremost seems to lead to a growing number of marginal or part-time farming households rather than to a full-scale exodus from smallholder farming. With the exception for the 1960s, when many Meru migrated to the plains for new land, most of the past population growth has been absorbed on the mountain. Also today, commuting to Arusha rather than migrating seems to be the preferred strategy, although the latter option may have increased somewhat in the 1990s. Family farming, albeit somewhat amputated due to land shortage and adverse policy conditions, is still the by far dominant organisation of agricultural production in Meru. To maintain this organisation, off-farm incomes provide a most crucial means.

The agrarian question

Associated with the discussion above is the possible dissolution of peasant societies from forces that produce accelerating inequality in income and resources. Like most smallholder societies, the Meru peasantry is stratified in terms of agricultural resources, income and wealth. In the classical interpretation, such inequalities were seen as incipient class divisions caused by households' differing ability to take advantage of market opportunities. The end product of this process was a polarisation of the rural population into opposing classes of capitalist farmers and agricultural labourers.

Two important reservations can be made regarding the validity of this thesis and which are of relevance for the Meru case (as well as for other agricultural societies). One is that in the classical interpretation, demographic factors (e.g. population growth) were hardly considered. In the Meru case, for example, population growth has had a fundamental impact on both agricultural intensification and the socio-economic structure of the rural society. Not only has population growth sharpened competition over land and changed the man/land ratio, hence aggravating land based inequality, it has also constituted an important condition for the emergence of markets and infrastructure, and perhaps most important, for livelihood diversification

through which income inequalities may be enhanced or reduced (Chapter Six and Thirteen).

The other reservation concerns labour specialisation as the dominant mechanism through which the peasantry is expected to become dissolved and replaced by more efficient and specialised farm enterprises. However, one reason for the preservation of peasant and family farming has been the reliance by smallholders on diversified rather than on specialised income strategies, as we argued in the previous sections. A flexible domestic labour force able to draw on off-farm income at times when prices for crops are unfavourable or when harvests fail are among the reasons that give smallholders an advantage over the specialised and capitalist type of farm depending on hired labour. In recent decades diversification has become recognised by development planners and policy makers as a means of agricultural and economic growth in countries where the agricultural structure is dominated by smallholders.

There are, however, diverging views about the implications of diversification on income distribution and equality in rural societies. Bryceson (1997a; 1997b), for example, argues that 'de-agrarianisation' implies a process of cumulative advantages and disadvantages for different rural strata, hence aggravating existing inequalities. The poor and nearly landless diversify in order to survive, while the rich do so in order to accumulate resources and increase their wealth. According to Bryceson (1997b, 244ff; 2000), this process leads to the gradual dissolution of the peasantry by well-to-do farmers transcending peasant agriculture and becoming large-scale capitalist farmers while the majority, faced with shortage of land and other resources, resort to low income off-farm options as a survival strategy (Chapter Seven and Thirteen).

A snapshot view of the Meru situation gives much credit to this proposition. Conspicuous differences exist in wealth (Chapter Fourteen). The poorest strata have very small farm resources and to a great extent depend on casual wage labour with little or no room for surplus production or extra income. In contrast, the richest households own large farms and other resources and they hire labour for their farm operations. They too diversify into off-farm activities but on a much larger scale of operation and input of capital than other households. They own buses, trucks and tractors, and they are involved in the wholesale and transportation of crops and other

goods. Some of them also own property and houses in town. Many of them are well educated and politically influential, holding leadership positions in both formal and traditional organisations and institutions. As a consequence, they are able to draw for resources and influence on a large network of relatives, business colleagues and politicians.

The questions we raised deal with the content and nature of inequality under diversified livelihoods, how it has changed over time, as well as the factors responsible for both the conspicuous inequality observed and, at the same time, the lack of a full-scale proletarianisation of part of the population. Our operational definition of wealth was based on a range of income and resource indicators including farm assets, educational level, and capital goods from which we constructed a wealth index (Chapter Three and Fourteen). Among the pertinent findings that surfaced as we dissected the pattern of inequality in Meru was differentiation referring to gender and age factors. The neglect of these factors represents an additional reservation with respect to the classical interpretation of inequality in peasant societies.

Gender and generational aspects

Female headed households are disproportionately represented in the poor groups, a circumstance that is partly explained by reference to traditional institutions and value systems that give women a subordinate position versus that of men and confine them to subsistence farming and the domestic household sphere (Chapter Fifteen). The gender bias is present for all aspects regarding income and ownership and control of resources but is particularly striking in the case of education. Partly as a consequence hereof, women are less involved in off-farm work than men are and they virtually never participate in public life or in village organisations.

Although women gain status and increasing economic freedom with rising age, few women can decide about economic matters of importance without the consent of their father or their husband or his relatives. At the same time, gender issues are at the base of many conflicts in the domestic and public spheres, since with improved education for girls and their increased participation in income generating activities outside the farm, women are less prepared to accept their subordinate position. Also, the shortage of land

has made it difficult to uphold one of the pillars of the patriarchal society; that of granting the wife a piece of land for subsistence in exchange for the bride price.

In this situation, the traditional gendered division of labour and power is challenged by women who divorce or choose not to marry, who inherit a piece of land from their parents, who gain access to education and explore job opportunities, or who within the marriage union demand greater control of the flow and use of cash income. While all these changes bring conflicting views about economic and social life, they may also be an indication of a process towards greater equality between men and women.

Part of the overrepresentation of women in the poor household strata, however, is not due to gender bias but reflects life cycle aspects of rising and declining wealth. As the last surviving household members, elderly widows are at the end of their households' life cycle. At their age, they are unable to work as hard as before, they depend on remittances from children and their land and other assets are being distributed to heirs.

In fact, part of the overall distribution of wealth is explained by the tendency for young and middle-aged households to accumulate resources and for elderly ones to disburse them (Chapter Sixteen). Middle-aged households (Seuri age group), for example, have a larger than average household labour force and are more likely than other groups to score high on the wealth index. The welfare aspirations shown by young and middle aged households and the reduced consumption demands by elderly people are other factors that contribute to give the wealth distribution a distinct life cycle pattern.

Although important, the life cycle can only explain part of the overall distribution of wealth. With both age mates and female headed households diverging in wealth, what other factors are responsible for the emergence of inequality and the skewed distribution of wealth in Meru?

Trends of differentiation and levelling

One effect of population growth under conditions of land shortage, customary tenure and limited outmigration is a striking generational difference in farm size. In the 1990s, a son only inherited about one fifth of the size of

the land his grandparents obtained 50 years earlier. The conspicuous generational disparities in farm size are, however, to some extent cushioned and compensated for by the higher educational level and greater reliance on off-farm incomes by younger and middle-aged households. Although land continues to be the most valued asset in Meru, there has been a gradual shift over time in what constitutes wealth, a circumstance reflecting the gradual shortage of land and the more complex and diversified division of labour following higher population densities and market integration. In the course of the last half century, wealth criteria have shifted from cattle to land and from land and commercial farming to off-farm incomes, with education providing an important means for the level of income derived from the latter type of source. In this situation, a small farm size is not automatically an indication of poverty.

The gradual shift in the emphasis of what constitutes wealth renders an advantage to those individuals and households that have been able to adapt to and take advantage of the economic opportunities entailed in this process. Towards the end of colonial rule an elite of farmers who had grown rich on coffee in the post-war period had risen to prosperity and political power. At a time when commercial farming held a promise of radical increases in per capita income, this group of farmers experimented with new farming methods, introduced high yielding dairy cows and accumulated land on the mountain and on the plains where they established large farms for the mechanised cultivation of maize and beans. And they broadened their economic base by adding activities such as trading, construction and transport to their repertoire of income sources.

Although the majority copied the behaviour of this group by adopting coffee as a major cash crop in the 1960s, hence being able to increase their standard of living, most of them could not reach the incomes and influence experienced by the elite. To a great extent, the elite of farmers that emerged in the 1950s consolidated their wealth thereafter by diversifying into off-farm activities and by drawing on a large network of clients and patrons, business companions and politicians. Many of them have successfully extended their wealth to their sons by giving them good education or a business capital through which they are now able to enjoy remittances at old age. In contrast to this elite is a poor group of farmers, endowed with initially small farm resources, low education and depending on casual wage work for

better-off relatives or for employers in Tengeru or Arusha. The income of this group is small, their fallback options few and their risk margins and social support networks are narrow. The groups described represent the extreme sides of the wealth distribution now characterising farm households in Meru.

To what extent does this pattern of inequality reflect a process of polarisation and class formation as described earlier? Our assumption is that in order for classes to emerge, differences in wealth must be consistent and durable. Despite the apparent inequality between households, which may lead one to think in the direction of accelerating polarisation, our conclusion is that both upward and downward social mobility is of such a magnitude that polarisation in the classical sense seems a quite unlikely long-term outcome of the observed disparities in wealth. Inequalities in resources and income are striking (and probably increasing) but are at the same time subject to considerable fluctuation over time as to which households and individuals are favoured and disfavoured. We found that brothers commonly diverge in wealth and that sons often divert from the wealth position of their fathers and grandfathers. Our findings indicate that forecasts about individual wealth on the basis of parental wealth are rather uncertain (Chapter Seventeen).

This means that a person facing a modest condition at the outset, at a later point in life may overcome his/her poverty condition by taking advantage of income opportunities offered and by use of skill, dedication and hard work climb the social ladder. There is no doubt that the more numerous income opportunities brought by economic liberalisation in the 1990s have provided sources of prosperity for many households with very small landed resources. The opposite situation of course also prevails. Some individuals have failed to make use of a fortunate initial condition and by mismanagement or lack of skill or foresight have lost resources and income.

Sibling size is among the factors leading to both upward and downward social mobility. A single heir stands a better chance of replicating the wealth position of his father or moving upwards the social ladder than one that has to share the land and other resources with a number of brothers (and sisters). Since the wealthiest households have a larger average number of surviving children than do the poorest ones, this is an important explanation of cases where sons fail to replicate the wealth of their parents. It also illus-

trates the observation that landed resources are rarely consolidated over generations.

What makes a person ascend or descend the social ladder, however, may not always be referable to surrounding constraints or opportunities or to individual characteristics. In the absence of formal insurance systems and where climatic and market uncertainties are everyday realities, the difference between success and failure is often very small. There is in the life condition of smallholders a not uncommon strain of both luck and misfortune. A person may grow wealthy at a strike of luck or by skill and hard work, but may lose it all at a go unless the resources are well cared for. Similarly, the death or sickness of a breadwinner may cause a household to experience a considerable drop in income and living standard. A large network of supportive relatives may to some extent soften the effects of such misfortunes but not entirely.

Consolidation of wealth and preservation of family farming

Although the pattern of social mobility outlined contradicts the thesis of long-term polarisation and suggests the presence of a large group of 'middle' peasants, we must take account of the observation that mobility from the uppermost and lowest social strata is more restricted than from the middle wealth groups. In fact, the uppermost stratum has been quite successful in consolidating its wealth over time and across generations, yet, without a corresponding dispossession of the less fortunate farmers on the mountain. This group has consolidated its position mainly by drawing on resources *outside* the mountain, i.e. by taking up large-scale cultivation on the plains and by diversifying into the non-farm sectors of the economy (Chapter Fourteen and Eighteen).

The way the wealthy group survived the equity policies under Ujamaa and the subsequent economic crisis gives testimony to the resources and networks of this group of farmers. While the majority of smallholders suffered from contracting markets, lack of business opportunities and shortages of consumer goods as the country was plunged into a deep economic recession, the rich fared rather well. In several cases they managed to increase their farms and their wealth thanks to their access to parallel markets, modern

farm inputs, trading activities etc., which they gained access to partly as a result of their extended social networks and political connections.

While, on the one hand, the rich continue to buy land from poorer relatives today, on the other, by paying respect to the moral code that stipulates that every person is entitled to land for subsistence, their kinsmen or neighbours are prevented from destitution. In no case has land purchases by the wealthy implied the total dispossession of the seller. Hence, by complying with the 'moral economy of the old society' their strategy of accumulation and wealth has hitherto been socially acceptable. The wealthy often hold leadership positions in both formal and informal institutions. As respected leaders and patrons they can gather loyal clients and poorer relatives in arrangements that have advantages for both parties. Customary land tenure does not restrict wealthy households from buying land from poorer kinsmen or employing them as labourers. Tradition, however, has no doubt contributed to the preservation of family farming and prevented the emergence of a landless class of former peasants.

Current trends and outlooks

Virtually all households earn off-farm incomes but it is the wealthy ones that more than others have been in a position to take advantage of the opportunities entailed in economic liberalisation and managed to increase their resources and incomes in the 1990s. In contrast, the poorest households seem stuck in a vicious circle of inadequate land, low income and education, dependence on petty business and casual employment and with few options for social and economic advancement. It is on this basis correct to conclude that inequality has increased in the period of economic liberalisation and structural adjustment, and that diversification and 'de-agrarianisation' have implied an increasing gap in incomes and living conditions between the poorest and wealthiest strata of the rural population. A striking feature in this development is the gendered pattern of inequality with female-headed households being disproportionately represented among the poorest strata of the rural population.

Today's social tensions also raise questions regarding the capacity of traditional institutions and leaders in addressing such inequalities and safe-

guarding the right to land for everybody, including women. Customary tenure is challenged from outside, with external businessmen bypassing clan elders and buying land in the villages near the townships, and from within, by women questioning male supremacy to land inheritance. And the very scarcity of land put brothers, relatives and neighbours up against one another in numerous conflicts over land inheritance and farm borders.

It is more difficult, however, to conclude that such developments and inequalities also are indication of class formation and dissolution of the peasant or family type of farming. At the same time as the gap in incomes and resources is growing bigger, there appears to be opportunity for both social advance and decline. The observation that poor people work for the rich is not a phenomenon emerging with economic liberalisation but one that was reported from early colonial rule and before (see Chapter Eight and Eighteen). Yet, in the present situation of continued population growth and fragmentation of holdings, an increasing number of (young) households are bound to approach the ranks of landless or near landless 'semi-proletarians'. They become 'functionally landless' or 'peasants without land', a condition that agreeably seems to indicate a substantial change of livelihood and occupational status and one which involves an increased dependence on petty business or labouring for large-scale farmers.

At the same time, 'functionally landless' is a rather mis-directed description of households that are able to make a complementary income out of extremely small holdings. The continued existence of part-time farming on the mountain is the result of household members' ability to make an income out of their land, for example by intensifying production by bringing inputs in from outside as is the case for dairy farming. It is interesting to note that a current trend in the villages near the townships is the strategy by farmers of using part of their land for building accommodation quarters for migrant workers, a land use that provides a higher income than does farming on the same land. This is illustrative of another condition, i.e. that the ability of households to retain their holdings increasingly will hinge on their fetching incomes from outside. In this, their flexible labour force and consumption level and their access to social networks are crucial assets.

Despite the temptation to see present developments as indication of a disruption of peasant farming, the overall evidence we have gathered points in the direction that the large majority of smallholders hold on to fragment-

ed holdings with the help of off-farm incomes. The pattern of land sales on the mountain, for example, do not verify a picture of poor households being dispossessed by selling land to wealthier relatives. It is not the poorest households that are the most frequent sellers, and indebtedness and destitution are not the most common reasons for households to part with their landed inheritance. The picture that emerges is rather one in which households give emphasis to off-farm incomes and life aspirations. Most often, sales reflect the need by households to get a capital for educating their children, for building houses, for starting a business or for buying a larger but cheaper land elsewhere.

It must be emphasised, however, that in the light of future inevitable population growth and shortage of land, social and economic development also depend on markets and institutions tailored to the needs of smallholders rather than to the demands of large-scale farmers. Such needs refer to measures that can both contribute to raise agricultural productivity *and* increase opportunities for incomes outside farming in order to relieve pressure on the land. In the latter respect, especially, the economic liberalisation of the 1990s represents a positive change from the economic crisis of the 1980s. The increase in per capita incomes and the improved food security experienced by Meru households in the 1990s mainly stem from their increased participation in activities outside their farms. Also for the poorest households the 1990s have brought some improvements as income opportunities have increased and the real price of food staples dropped.

The picture regarding agriculture is more ambiguous, however. On the one hand, there can hardly be any doubt that an urban driven agricultural growth occurs in Meru resembling the one described by Tiffen et al (1993) for Machakos area in Kenya. It is also quite obvious that this process is reinforced by forces released as result of the economic liberalisation reform programme, and that off-farm incomes are likely to have a positive impact on agricultural growth and intensification.

On the other hand, despite the positive injections that stem from the increased urban and national demand for local produce, agriculture suffers from low productivity of labour, market and climatic uncertainties, as well as institutional, infrastructural and organisational constraints. These conditions appear to contribute to an agricultural performance below what realistically could be obtained from such an ecologically favoured area as Mount

Meru. Agricultural constraints are particularly noticeable in the case for coffee, which no longer is the prime cash generator. Also dairy farming, however, faces serious constraints due to market saturation and lack of means for improving labour productivity. On the plains, production and productivity of staple crops such as maize and beans appear to have stagnated following high prices for farm inputs and low producer prices. For most of the 1990s, the population in the district has resorted to dependence on imports of maize, a development that can only be partly explained by drought conditions. While the economic reform programme undeniably has removed some constraints in relation to agriculture, it is quite obvious that the neo-liberal policies of our time are inadequate in addressing and solving some of the production and marketing constraints currently experienced by farmers.

On the basis of these conditions and the fact that land is in scarce supply, agriculture alone can hardly be expected to generate jobs at a pace exceeding current population growth rates or lead to substantial per capita increases in income and living standards in the future. In spite of the agricultural growth and intensification that presently occurs on the mountain and which undeniably have positive effects on household incomes and food security, one cannot disregard the long-term implications of the fact that an increasing number of households have holdings barely exceeding the size of a garden plot. Although there is an ongoing shift in farming to more valuable crops (i.e. vegetables) for which there is an urban demand, most of the increase in incomes over the last ten years or so has come from households' increased participation in off-farm activities. This trend is likely to become stronger in the future.

Also with respect to non-farm sectors, however, have the neo-liberal policies of the 1990s failed to address apparent bottlenecks. There is, for example, a large but hitherto unmet demand for credit to small-scale entrepreneurs that NGOs have only partly been able to respond to. And, as yet, there are few small industries and virtually no local processing plants for local agricultural produce. In one of the most favourable areas for agriculture in Tanzania, such small-scale industries could provide crucial and viable links between family farming and the off-farm employment dearly needed by Meru youths. However, such initiatives and institutional reforms may not come about without some kind of governmental intervention.

Despite increasing inequality between households, monetisation of the local economy, difficulties in maintaining customary land tenure, gendered and generational conflicts etc., some of which we have only been able to cover in a rudimentary fashion, it is our overall conclusion that family farming on Mount Meru is not in a process of being replaced by more specialised, more large-scale or more 'business' oriented or capitalised farm units. In the absence of large-scale industrialisation that could attract large numbers of rural people into waged work, present conditions seem too uncertain and are not sufficiently attractive or compelling for household members to give up their deeply rooted attachment to the land. For many Meru, the upsurge in off-farm activities in the 1990s has rather provided the means for a continued life on the mountain and in some cases also implied a rise of incomes and living standards. With all respect to uncertainties about the future, family farming seems likely to remain the backbone of agriculture on Mount Meru for many years still. 'Peasants without land' remain a more likely scenario than 'land without peasants'.

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Series 9/NA (Native Affairs)

Series 63/AR (Arusha)

Series 69/AR

Series 471/AR

Series 472/AR

Series AB 367 (Old file 2963,1)

Series AB 31 (Old file 1731)

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Appendix

I, II, III and IV

SURVEY OF HOUSEHOLDS

1. SOCIO-ECONOMIC SITUATION AND LAND-USE

Household ID: __ / __ / __

Head of household:

Village - subvillage:

Date for interview: __ / __ / __

Enumerator:



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1. Socio-economic situation and land-use.

A001 Household ID _____ A002 Head of household _____ A003 Ranking position ____
 A004 Age group of head of household..... A005 No. of household members? __ A006 Polygamous head? _ (1=yes, 2=no)
 A007 No of appended households: _ A008 Village..... A009 Subvillage..... A010 Date for interview _ / _ / _
 A011 Enumerator..... A012 Respondent..... A012b Sampled _ (1=yes, 2=no)

A. HOUSEHOLD MEMBERS

1. Questions about all people belonging to the household. (including respondent)

B001 Status ID	B002 ID No.	B003 Name	B004 Relation to head	B005 Sex	B006 Age	B007 Marita l status	B008 If ever married, when?	B009 Years in school	B010 Main Occup	B011a Non- farm income	B011b Present or absent
01	01		00								
01	02										
01	03										
01	04										
01	05										
01	06										
01	07										
01	08										
01	09										
01	10										
01	11										
01	12										

B004: 00=head, 01=wife, 02=son, 03=daughter,
 04=brother, 05=sister, 06=father, 07=mother,
 08=grandchild, 09=father in law, 10=mother in law,
 11=other (specify), 99=do not know, refuse to answer
 B005: 1=male, 2=female
 B006: known or estimated age, completed years 01-
 00=less than one year, 99=do not know, refuse
 B007: 1=married monogamous, 2=married polygamous
 3=widowed monogamous, 4=widowed polygamous,
 5=divorced, 6=single, 9=do not know,
 B008: enter last two digits of known or estimated year
 of latest marriage, 99=do not know, refuse
 B009: 00=never been to school, 01- =estimated no. of
 completed years in school, 99=do not know, refuse
 B010: 1=farmwork/housework, 2=employment,
 3=business, 4=casual labour, 5=in school,
 6=dependent (small child, retired adult or
 disabled person), 9=do not know, refuse.
 B011a: Non-farm income in the past year? 1=yes, 2=no
 B011b: 1= present, 2= absent during the last night.

1.2 Non-farm incomes, commuting & labour migration.

A017a Has anybody in the household earned non-farm income in the past year? _ (check B011a on page 1) (1=yes, 2=no, 9=do not know, refuse)

If there are no household members earning non-farm income, skip to the next page.

Of the household members recorded on the first page, enter those members who earn non-farm income. (indicated by "1" in column B011a).

B001 Status ID	B002 ID No.	B003 Name	B107 Kind of income source(s)	B108 Inside or outside village	If any income source is outside village, ask: >>>>>> If all income source(s) are from inside village only, skip to next page.	B109 If outside village, where is place of income? (Village, town, district etc)	B110 Kind of income source outside village	B111 Com- muting	B112 Com- muting for kind of income source	If staying at place of income. Expected or last length of absence?		
										B113 Months	B114 Weeks	B115 Days
01												
01												
01												
01												
01												
01												

B107: , 01=permanent employment, 02=seasonal/temporary employment, 03=permanent business or self-employment, 04=seasonal/temporary business or self-employment, 05=permanent casual labour (all year), 06=seasonal/temporary casual labour, 07=combining seasonal employment and business, 08=combining seasonal employment and casual labour, 10=combining business and casual labour, 11= other combinations (state which ones), 99=do not know, refuse

B108: Are the sources of income located inside or outside the village? 1=inside, 2=outside, 3=both, 9=do not know, refuse.

B109: If any income sources are located outside the village (B108=2 or 3), specify location or locations of income, 9=do not know, refuse

B110: State kind of income source outside village. For codes, see B107.

B111: Does the member of household commute (=travel from home to work every day)? 1=yes, 2=no (stays overnight at place of income).

B112: If commuting, state kind of income source for which household member commutes. For codes, see B107.

B113 - B115: If staying overnight at place for income, for how long is he/she expected to stay away or did he/she stay away from home last time? If less than 1 month, enter "00", 01 = no. of months, / If less than 1 week enter "00", 1-4 = no. of weeks, / 1-7 = no. of days, 99= do not know, refuse.

1.3 Temporarily absent household members

A017b Is anybody in the household absent (slept elsewhere last night)? _ (check B011b on page 1) (1=yes, 2=no, 9=do not know, refuse)

If there are no absent household members, skip to next page.

Of the household members recorded on the first page, enter those who are temporarily absent/ slept elsewhere the preceeding night (indicated by "2" in column B011b).

B001 Status ID	B002 ID No.	B003 Name	B014a Reason for absence	Expected length of absence		
				B015 Months	B016 Weeks	B017 Days
01						
01						
01						
01						
01						
01						

B014a: 1=marriage, 2=employment, 3=business, 4=casual labour, 5=farming elsewhere, 6=education, 7=fostering, 8=other reasons, 9=do not know, refuse

B015: 00= less than a month, 01- = no. of months, 99= do not know, refuse

B016: 00= less than a week, 01-04 = no. of weeks, 99=do not know, refuse

B017: 01-07 = no. of days, 99 do not know, refuse

2. Permanent out-migration (former household members)

A017c Since you acquired your resident plot have any members of your household left to settle elsewhere? _

If no, skip to section 3., next page: "3. Permanent in-migration".

If yes, enter information below for those persons who have settled elsewhere:

B001 Status ID	B002 ID No.	B003 Name	B004 Rela- tion to head	B005 Sex	B006 Age	B007 Mari- tal status	B008 Married when?	B009 Years in school	B010 Main occup	B012 Living in village	B013 If outside village. Where? (Village, town, district etc)	B014b Reason for leaving	B018 Year when left	B019a Land in village now	B019b Land in village future	B019c Remit cash
02	01															
02	02															
02	03															
02	04															
02	05															
02	06															
02	07															
02	08															
02	09															
02	10															
02	11															
02	12															

B014b: 1=marriage, 2=employment, 3=business, 4=casual labour, 5=farming elsewhere, 6=education, 7=fostering, 8=other reasons, 9=do not know, refuse

B018: enter last two digits of year, 99=do not know, refuse / B019a: Is the migrated person now having land in the village? 1=yes, 2=no, 9=do not know

B019b: Is the migrated person expected to inherit land in the village? 1=yes, 2=no, 9=do not know

B019c: Does the migrated person remit cash? 1=yes, 2=no

When completed, go to next page: "3. Permanent in-migration".

3. Permanent in-migration (place of origin)

B020 Were you (head of household) born in this village? _ (1=yes, 2=no)

If *no*, B021 Where were you born? _____ (village, town, district etc.)

Now, continue on this page if head of household is a male, or go to page 8 if head of household is a female.

Questions to male head of household only:

B022 Was your (present) wife born in this village? _ (1=yes, 2=no)

If *no*, B023 Where was she born? _____ (village, town, district etc.)

4. Marital status: *(Questions to male head of household only)*

4.1 Monogamous or polygamous?

B024 Are you presently or *have you ever* been married to more than one wife *at the same time*? _ (1=yes, 2=no, 9=refuse)

If no skip to question B038, page 7.

If yes,

B025 How many wives in all? _ (2-8=no., 9=refuse)

Now continue on the next page with information about all wives.

4.1 continued...

Please enter information about all wives (including wife in interviewed household), whether now alive or not:

B026 Wife No.	B027 Name of wife	B028 Now alive	B029 Age	B030 Married when?	B031 No. of children born	B032 Living in village?	B033 If outside village. Living where? (Village, town, district etc)	B034 Size of allocated plot in coffee-belt (acres)	B035 Size of allocated plot in low-lands (acres)	B036 Born in village	B037 If born outside village. Where? (Village, town, district etc)
01								,	,		
02								,	,		
03								,	,		
04								,	,		
05								,	,		
06								,	,		

B028: 1=yes, 2=no, 9=do not know,refuse

B031: 00=no children born, 01- =no. of children, 99=do not know,refuse

B034/B035: 00=no land allocated, 99=do not know,refuse

B036: 1=yes, 2=no, 9=do not know,refuse

B037: enter name of village, town or district, 9=do not know,refuse

When completed, skip to page 11, Part B, question A018.

Questions to monogamous male head of household:

4.2 Previous marriages?

B038 Have you ever been married before you married your present or last wife? _
(1=yes, 2=no, 9=refuse)

If no skip to question A018, Part B, page 11.

If yes,

B039a How many times have you been married before? _

B039b When did you marry the first time? __ (year)

Please enter information about previous wife/wives.

B040 Wife No.	B041 No. of children born	B042 Wife born in village	B043 If born outside village. Where? (Village, town, district etc)	B044 Termination of marriage
01				
02				
03				

B044: 1=death of wife, 2=separation/divorce, 9=do not know, refuse

When completed, skip to page 11, question A018.

Questions to women heads of household. Check page 1, column B007 for marital status, then chose either 4.3 (widow), 4.4 (divorced) or 4.5 (single).

4.3 Widow head of household (Marital status = 3 or 4, page 1)

B090. When did you become a widow? __ (year, 99=do not know,refuse)

B091. How old were you when you became a widow? __ (year, 99=do not know,refuse)

B091b. Were you the only wife of your husband? _

If respondent was less than 50 years of age when she became a widow, continue with B092. Otherwise skip to B096b, below.

B092. After you became a widow, have you given birth to any children? _ (1=yes, 2=no, 9=refuse)

If no, skip to question B096b, below.

If yes,

B093 How many children? __

B094 Who pays/will pay for the education of children born after you became a widow?

_____ (if other person than self, state relationship, for example father, brother of husband etc)

B095 Is the father (or any of the fathers) of any of these children related to the late husband? _

If no, skip to question B096b, below.

If yes,

B096 What is his (their) relationship to your late husband? _____

For the following questions try to get an idea of whom in the household controls the income, decides about farm management, such as sale of livestock, up-rooting of coffee etc. Is the woman the sole decision maker? Is she the one to decide about whom should inherit the land? Can she decide to give her daughters land? Probe if the respondent needs the consent of, for example, the late husband's relatives in order to make decisions and if she has to submit part of her income.

B096b Do you alone, without other people interfering, control the income you earn from land, animals and crops? _ (1=yes, 2=no, 9=do not know, refuse)

B096c Would you alone, without other people interfering, be able to sell cattle or up-root coffee-trees? _

B096d Can you alone, without other people interfering, decide whom should inherit your land?

If yes to all questions B096b - B096d, skip to page 11, question A018.

If no to any of these questions, also ask:

B096e With which other person(s) do you need to refer for matters regarding crops, livestock, land and income? _____ (state relationship)

When completed skip to page 11, question A018.

4.4 Divorced woman head of household (Marital status = 5, page 1)

B097 When were you divorced/separated from your husband? __ (year)

B098 How old were you when you became separated? __ (year, 99=do not know,refuse)

B098b Were you the only wife of your husband? _

If respondent was < 50 years of age when divorced, continue with B099. Otherwise skip to B101b, below.

B099 Have you given birth to any children *after* your separation? _ (1=yes, 2=no, 9=refuse)

If no, skip to B101b, below.

If yes,

B100 How many children? __

B101. Who pays/will pay for the education and support of your children born *after* your separation? _____ (if other person than herself, state relationship, for example father of respondent, brother, father of children etc)

For the following questions try to get an idea of whom in the household controls the income, decides about farm management, such as sale of livestock, up-rooting of coffee etc. Is the woman the sole decision maker? Is she the one to decide about whom should inherit the land? Can she decide to give her daughters land? Probe if the respondent needs the consent of other persons in order to make decisions and if she has to submit part of her income to somebody else.

B101b Do you alone, without other people interfering, control the income you earn from land, animals and crops? _ (1=yes, 2=no, 9=do not know, refuse)

B101c Would you alone, without other people interfering, be able to sell cattle or up-root coffee-trees? _

B101d Can you alone, without other people interfering, decide whom should inherit your land?

_

If yes to all questions B096b - B096d, skip to page 11, question A018.

If no to any of these questions, also ask:

B101e With which other person(s) do you need to refer for matters regarding crops, livestock, land and income? _____ (state relationship)

When completed skip to page 11, question A018.

4.5 Single, never-married women head of households (Marital status = 6, page 1)

B102. Do you have any children? _ (1=yes, 2=no, 9=refuse)

If no, skip to question B104b, below.

If yes,

B103a How many children do you have? _ _

B103b Who pays/will pay for the education of your children? _____ (if other person than herself, state relationship, for example father of respondent, brother, father of children, etc)

B104. Do you (or your children) at present get any economic support from (any of) the father(s)? _

For the following questions try to get an idea of whom in the household controls the income, decides about farm management, such as sale of livestock, up-rooting of coffee etc. Is the woman the sole decision maker? Is she the one to decide about whom should inherit the land? Can she decide to give her daughters land? Probe if the respondent needs the consent of any other person in order to make decisions and if she has to submit part of her income to somebody else.

B104b Do you alone, without other people interfering, control the income you earn from land, animals and crops? _ (1=yes, 2=no, 9=do not know, refuse)

B104c Would you alone, without other people interfering, be able to sell cattle or up-root coffee-trees? _

B104d Can you alone, without other people interfering, decide whom should inherit your land?

_

If yes to all questions B096b - B096d, skip to page 11, question A018.

If no to any of these questions, also ask:

B104e With which other person(s) do you need to refer for matters regarding crops, livestock, land and income? _____ (state relationship)

When completed skip to page 11, question A018.

B. ASSETS

Village & Coffee-banana belt:

Land

Resident plot:

A018 **Present size of your resident plot?** __, __ acres

A019 **Acquired when?** __ (year)

A020 **Acquired how?** __ (1=inherited, 2=purchased, 3=rented, 4=borrowed, 5=cleared self, 6=other, 9=do not know, refuse)

A021 **When you married (acquired this plot), how big was it?** __, __ acres

A022a **How much of your resident plot size is planted by coffee?** __, __ acres
(estimate, 00= no coffee planted)

A022b **Is the resident plot located in the open area above the coffee-banana belt (for example on steep hillsides, next to the forest reserve, etc.)** __ (1=yes, 2=no, 9=refuse)

Additional plots - within the village:

A023 **Apart from your resident plot, do you at present have other plots elsewhere in the village?**
__ (1=yes, 2=no, 9=refuse)

If no, skip to question A030.

If yes,

A024 **How many additional plots do you have in the village?** __

A025 **What is their total acreage?** __, __ acres

A026 **Did you buy any of these plots?** __ (1=yes, 2=no, 9=refuse)

A027 **Are any of your additional plots located in the open area above the coffee-banana belt? (for example on steep hillsides, next to the forest reserve etc)** __ (1=yes, 2=no)

If no, skip to question A030.

If yes,

A028 **How many plots?** __

A029 **What is their total acreage?** __, __ acres

Additional plots - outside the village:

A030 **Do you have additional plots elsewhere in other villages in West and East Meru (in Poli Division and excluding the lowlands)?** __ (1=yes, 2=no, 9=refuse)

If no, skip to question A037, next page.

If yes,

A031 **How many additional plots do you have in other villages?** __

A032 What is their total acreage? __, __ acres

A033 Did you buy any of these plots? _ (1=yes, 2=no, 9=refuse)

A034 Are any of your additional plots outside the village located in the open area above the coffee-banana

belt? (for example on steep hillsides, next to the forest reserve etc) _ (1=yes, 2=no)

If no, skip to question A037.

If yes,

A035 How many plots? __

A036 What is their total acreage? __, __ acres

A037 Have you ever sold, given as inheritance or otherwise parted any land you have had before? (consider all plots and locations that have been asked about) _ (1=yes, 2=no, 9=refuse)

If no, skip to question A039.

If yes,

A038 How? _ (1=given as inheritance, 2=sold, 3=both sold and given as inheritance, 4=other, 9=do not know, refuse)

A039 What is your total acreage of coffee? __, __ acres (consider all plots and locations mentioned).

A040 How many coffee-trees do you have in all? _____ trees. (no. of trees, 9999=do not know)

Cattle in the village and coffee-belt

A041 Total no. of stall-fed cows or heifers (in all plots)? __ (00=no cows or heifers, 01=no, 99=do not know, refuse)

(00=no)

A042 How many are up-graded? __

Lowlands - land

A043 Do you own any land in the lowlands at present? _ (1=yes, 2=no, 9=refuse)

If no, skip to question A050, next page.

If yes,

A044 How many plots do you own at present? __

A045 What is their total acreage adding them all together? __, __ acres

A046 When did you acquire your first land in the lowlands? __ (year)

A047 How did you acquire the land? _ (1=inherited, 2=bought, 3=reclaimed villagization land, 4=cleared self, 5=other, 9=do not know, refuse)

If only one plot, skip to question A050, next page. If more than one plot, ask:

A048 When did you acquire land last time? __ (year)

A049 How did you acquire the land? _ (1=inherited, 2=bought, 3=reclaimed villigization land, 4=cleared self, 5=other, 9=do not know,refuse)

A050 Have you ever sold, given as inheritance or otherwise parted any land in the lowlands that you have had before? _

If no, skip to question A052.

If yes,

A051 How? _ (1=given as inheritance, 2=sold, 3=both sold and given as inheritance, 4=land confiscated in villigization, 5=other, 9=do not know)

A052 During the last season (1995), did you pay any person in kind or in cash in order to cultivate land in the lowlands owned by somebody else? _

If no, skip to question A054.

If yes,

A053 What was the total size of land obtained this way? ____, _

A054 During the last season (1995), did you borrow land in the lowlands from any person without paying anything? _

If no, skip to question A056 or A060.

If yes,

A055 What was the total size of land being borrowed in this way? ____, _

Now, we would like some information about the largest plot you had access to last season, whether you own, hired or borrowed this plot.

A056 What was the size of the largest plot you had access to last season? ____, _ acres

A057 Where is it located? _____(Village+Ward)

A058 When did you get access to/acquire it the first time? __ (year)

A059 How? _ (1=inherited, 2=purchased, 3=hired, 4=borrowed, 5=reclaimed, 6=cleared himself, 7= other, 9=do not know,refuse)

Livestock

What kind of livestock, if any, do you have in the lowlands at present?

A060. Cattle _ (1=yes, 2=no, 9=do not know,refuse)

A061. Goats _

A062. Sheep _

Other assets

A063 Do you own real estate property outside the village? _ (1=yes, 2=no, 9=refuse)
(for example a house in town)

A064 Do you own either a shop or a bar inside or outside the village? _ (1=yes, 2=no, 9=refuse)

A065a Do you own a tractor? _

A065b Do you own any draught animal (oxen, donkey etc)? _

A066 Do you own a car (truck or bus)? _

A067 Do you own a motor bike? _

A068 Do you own a bicycle? _

C. PRODUCTION AND LAND USE:

Village and coffee-belt: (consider all plots)

A069 Does the respondent grow coffee? _ (1=yes, 2=no)

If no, skip to A075.

If yes,

A070 In the 1994 season, what was your total coffee yield from all your plots? _ _ _ _ kg

A071 Do you use chemical fertilizers on your coffee? _ (1=yes, 2=no, 9=refuse)

A072 Have you ever planted coffee? _ (1=yes, 2=no, 9=do not know, refuse)

If no, skip to question A075.

If yes,

A073 When did you plant last time? _ _ (year)

A074 What was the land used for before you planted coffee? _____

A075 Have you ever up-rooted coffee? _ (1=yes, 2=no, 9=do not know, refuse)

If no, skip to question A078.

If yes,

A076 When did you up-root coffee last time? _ _ (year)

A077 What is the land now used for? _____

A078 Is your shamba irrigated? _ (1=yes, 2=no, 9=refuse)

A079 Was your shamba irrigated when you married (acquired the plot)? _

Which crops did you grow in the village last season (consider all plots)? (1=yes, 2=no)

A080 Coffee _	A085 Sweet pot. _	A090 Fodder _
---------------	-------------------	---------------

A081	Bananas	__	A086	Irish Pot.	__	A091a	Other	__	(state which)
A082	Maize	__	A087	Millet	__	A091b	_____		
A083	Beans	__	A088	Cassawa	__				
A084	Peas		A089	Vegetab.					

A092 Are there any crops which you grow now but did not grow at the time when you had just married (acquired the plot)? __ (1=yes, 2=no, 9=do not know,refuse)

If no, skip to A094.

If yes,

A093 Which crop(s)? _____

A094 Are there any crops which you have now stopped growing but which you did grow at the time when you married (acquired the plot)? __ (1=yes, 2=no, 9=do not know,refuse)

If no, skip to A096.

If yes,

A095 Which crop(s)? _____

If respondent has cows or heifers (check with question A041, page 12), ask A096. If no cows. skip to A102, below.

A096 How many of your cows have been milking in the past year? __ cows
(00=no cows milking, 01- =number, 99=do not know,refuse)

If no cows have been milking, skip to question A101.

If yes,

A097 In the past year what has been the *highest* total milk production per day from all your cows in the village? __ liters (00=no milk)

A098 In the past year what has been the *lowest* total milk production per day from all your cows in the village? __ liters (00=no milk)

A099 Do you *nowadays* produce more or less milk as compared with the time when you had just married (acquired the plot where you now reside)? __ (What is the general trend?)
(1=more milk now, 2=less milk now, 3=no difference, 9=do not know, refuse)

A100 How often do you give your cows dairy mill to eat when they are milking? __
(0=never, 1=sometimes, 2=at least once a week, 3=every day, 9=do not know, refuse)

A101 Do you yourself grow enough fodder for your cow(s)? __ (1=yes, 2=no, 9=do not know,refuse)

Lowland farms: (if no plots or cultivation in the lowlands, skip to A111, next page.)

Which crops did you grow in the lowlands last season (consider all plots)?

(1=yes, 2=no, 9=do not know,refuse)

A102	Maize	_	A105	Seed beans	_
A103	Beans	_	A106a	Other	_ (state which)
A104	Sunflower		A106b		

A107 On how many acres *totally* did you grow maize? ____, _ acres

A108 Did you apply any chemical fertilizer on your maize last season? _

(1=yes, 2=no, 9=do not know,refuse)

If no, skip to A110.

If yes,

A109a How many kgs of fertilizer in total did you apply on the maize? ____ kgs (9999=do not know, refuse)

A109b Did you apply any fertilizer on your maize at the time when you aquired your first plot in the lowlands? _ (1=yes, 2=no, 9=do not know,refuse)

A110 What was your total maize harvest in 1995 season? ____ bags (9999=do not know,refuse)

D. LABOUR

Coffee-belt & village:

For which of the following tasks did you hire labour for your village plot(s) during the past year?

(1=yes, 2=no, 9=do not know,refuse)

A111	Land preparation	_	A116	Harvesting coffee	_
A112	Weeding	_	A117	Bringing/collecting fodder	_
A113	Fertilizing	_	A118a	Other tasks	_ (state)
A114	Pruning coffee	_	A118b	_____	
A115	Spraying coffee				

Lowlands: (if no plots or cultivation in the lowlands, skip to next page, A131.)

A119 How did you prepare land on your lowland plots during the past year/season? _

(1=no ploughing, only manual digging, 2=ploughing with own oxen, 3=ploughing with hired or borrowed oxen, 4= ploughing with own tractor, 5=ploughing with hired or borrowed tractor, 6=other, 9=do not know,refuse)

For which of the following task(s) did you hire labour on your lowland plots during the past year/season? (1=yes, 2=no, 9=do not know, refuse)

A120 Land preparation _	A125 Whatching crops _
A121 Sowing _	A126 Tending livestock _
A122 Weeding _	A127a Other tasks _ (state)
A123 Fertilizing _	A127b _____
A124 Harvesting	

E. INCOMES

1. Sale of crops and animal produce (farm incomes):

Which farm products have you sold in the past year? (consider products from both the coffee-belt and the lowland plots.)

(1=yes, 2=no 9=do not know, refuse)

A131 Coffee _	A136 Beans _	A141 Peas _
A132 Bananas _	A137 Irish potatoes _	A142 Seed beans _
A133 Milk _	A138 Sweet potatoes _	A143 Fodder grass _
A134 Vegetables & fruits _	A139 Sunflower _	A144 Other _ (specify)
A135 Maize	A140 Millet	A145

A146 Which one of the farm products you sold have generated most cash income in the course of the past year? Probe and compare incomes from different crops + milk)

_ _ (if other, state which one) A147 _____

(01=coffee, 02=bananas, 03=milk, 04=vegetables, 05=maize, 06=beans, 07=irish potatoes, 08=sweet potatoes, 10=sunflower, 11=millet, 12=peas, 13=seed beans, 14=fodder-grass, 88=other, 99=do not know refuse)

A148 Which farm product came second in generating cash?

_ _ (if other, state which one) A149 _____

A150 Which farm product generated most money at the time when you had just married (acquired your resident plot in the village)?

_ _ (if other, state which one) A151 _____

2. Non-farm incomes:

A152 Which has been the most important *non-farm cash income* in the past year, if any? (Specify type of employment or business. If remittances or support, state the source. If no non-farm income write "none") _____

A153 Which was the most important *non-farm cash income* when you had just married (acquired your resident plot in the village), if any? _____

Over the past year, rank in order of amount the two most important sources of *cash* income of the household (*consider farm incomes as well as non-farm incomes*).

A154 1st _____ A155 2nd _____

A156 In a good year do you produce enough staples (maize, beans, bananas) for your food needs? _ (1=yes, 2=no, 9=do not know, refuse)

F. EXPENDITURES

Over the past year, rank the two major cash expenditures of the household:

A157 1st _____ A158 2nd _____

(probe and compare recurrent expenditures such as food, clothes, school-fees, farm inputs, transport, medicals etc, and ask the respondent to rank them)

A159 Have you had any extraordinary costs or made any major investments *in the past year*? _
(1=yes, 2=no, 9=do not know, refuse)

If no, skip to A162, below.

If yes,

A160 What was money spent on? (*specify*) _____

(for example paying a large medical bill, buying land, cattle, tractors, cars, building houses, establishing business etc, etc)

A161 How was that money raised? (*specify*) _____

A162 Did you *buy* staple foods (maize, beans, or bananas) at any time during the past year in order to feed your family? _ (1=yes, 2=no, 9=do not know, refuse)

A163 Do you regularly borrow money to be able to cover your expenditures? _
(1=yes, 2=no, 9=do not know, refuse)

A164 Are you normally able to save some money every year for future needs? _
(1=yes, 2=no, 9=do not know, refuse)

If respondent is a woman, finish the interview here.

Otherwise continue with next section on Reproduction (for husband only).

SURVEY OF HOUSEHOLDS

1. Socio-economic situation and land-use.

Complementary information

A001 Household ID ___ ___ ___ A002 Head of household
A002a Clan A009 Subvillage.....
A011 Enumerator..... Date..... A012 Respondent.....

Questions to male head of households only:

Previous absence:

B300 Have you ever been absent from this village for any period longer than 6 months?

—

If no, skip to B305, below

If yes,

B301 When did you last time return from such absence to live where you are now?

__ __ (year, 99=do not know)

B302 For how long were you absent (last time)? __ __ months

B302a Where were you staying _____

B303 What was the main reason for your absence? __

(1=marriage, 2=employment, 3=business, 4=casual labour, 5=farming elsewhere, 6=education, 7=other reasons, 9=do not know)

B304 Before the absence you have mentioned, have you stayed away from this village for any other period longer than 6 months? __ (1=yes, 2=no)

Non-farm income

Probe the question on non-farm income, and consider all incomes whether they are permanent or temporary, such as permanent or seasonal employment, large- or small-scale business, self-employment, casual labour, as well as remittances from absent hh members.

B305 In the past year, have you had any income apart from your farm? __ (1=yes, 2=no)

If no, skip to B309, next page

If yes,

B306 What is/was this income? _____

B307 From where (place/location)? _____ **B307a Commuting?** __

B308 If employed or business, state profession or occupation:

Former employment

B309 Have you ever been employed (before your present employment)? _ (1=yes,2=no)

If never, skip to B314

If yes, B310 Where were you employed last time? _____

B311 From when? __ (year) **B312 Till when?** __ (year)

B313 What was your profession? _____

Business:

B314 Have you ever been involved in business/self employment (before your present business)? _ (1=yes,2=no)

If never, skip to A200

If yes, B315 Where were you involved in business last time? _____

B316 From when? __ (year) **B317 Till when?** __ (year)

B318 What was your business? _____

Land:

A200a Estimate if resident plot is located on: _
(1=steep slope, 2=moderate slope, 3=gentle slope or flat land.)

Questions to all head of households:

A023a Apart from this plot around your house, do you now use/cultivate or did you in the past year use any other plot in the village? _
(include plots that are borrowed or hired, or cultivated on behalf of others, for example an absent brother)

If no, skip to A038a, next page

If yes,

A024a How many extra plots do/did you use? __

A025a What is their total acreage? __, __ acres

Now, record information below for the additional plots. In case the respondent has more than 5 extra plots, record information for the 5 largest plots.

Plot 1:

A025a Size of plot 1: __, __ acres

A026a Obtained when? __ (year)

A027a Obtained how? _ (1=inherited, 2=purchased, 3=borrowed, 4=rented, 5=cleared self, 6= other)

A028a Main crop/use? _ _ (01=coffee, 02=bananas only, 03=maize or beans, 04=animal fodder, 05=tomatoes, 06=other vegetables, 07=grazing, 08=non-farm use, f ex buildings, 10=other, 99=do not know)

A029a Inside/outside coffee belt? _ (1=inside, 2=outside, 9=do not know)

If no more plots, skip to A038a next page

Plot 2:

A025b Size of plot 1: _ , _ acres

A026b Obtained when? _ _ (year)

A027b Obtained how? _ (1=inherited, 2=purchased, 3=borrowed, 4=rented, 5=cleared self, 6= other)

A028b Main crop/use? _ _ (01=coffee, 02=bananas only, 03=maize or beans, 04=animal fodder, 05=tomatoes, 06=other vegetables, 07=grazing, 08=non-farm use, f ex buildings, 10=other, 99=do not know)

A029b Inside/outside coffee belt? _ (1=inside, 2=outside, 9=do not know)

If no more plots, skip to A038a below

Plot 3:

A025c Size of plot 1: _ , _ acres

A026c Obtained when? _ _ (year)

A027c Obtained how? _ (1=inherited, 2=purchased, 3=borrowed, 4=rented, 5=cleared self, 6= other)

A028c Main crop/use? _ _ (01=coffee, 02=bananas only, 03=maize or beans, 04=animal fodder, 05=tomatoes, 06=other vegetables, 07=grazing, 08=non-farm use, f ex buildings, 10=other, 99=do not know)

A029c Inside/outside coffee belt? _ (1=inside, 2=outside, 9=do not know)

If no more plots, skip to A038a below

Plot 4:

A025d Size of plot 1: _ , _ acres

A026d Obtained when? _ _ (year)

A027d Obtained how? _ (1=inherited, 2=purchased, 3=borrowed, 4=rented, 5=cleared self, 6= other)

A028d Main crop/use? _ _ (01=coffee, 02=bananas only, 03=maize or beans, 04=animal fodder, 05=tomatoes, 06=other vegetables, 07=grazing, 08=non-farm use, f ex buildings, 10=other, 99=do not know)

A029d Inside/outside coffee belt? _ (1=inside, 2=outside, 9=do not know)

If no more plots, skip to A038a below

Plot 5:

A025e Size of plot 1: _ , _ acres

A026e Obtained when? _ _ (year)

A027e Obtained how? _ (1=inherited, 2=purchased, 3=borrowed, 4=rented, 5=cleared self, 6= other)

A028e Main crop/use? _ _ (01=coffee, 02=bananas only, 03=maize or beans, 04=animal fodder, 05=tomatoes, 06=other vegetables, 07=grazing, 08=non-farm use, f ex buildings, 10=other, 99=do not know)

A029e Inside/outside coffee belt? _ (1=inside, 2=outside, 9=do not know)

A038a Do you now lend or rent away any portion/plot to another person, or have you done so at any time in the past year? _ (1=yes, 2=no)

Land use in village:

A200 Since you married (=acquired your resident plot) have you at any point changed local cows for up-graded cows? _ (1=yes, 2=no)

If no, skip to A202

If yes, A201 Which year did you do this the first time _ _ (year)

A202 In your situation, what is the major problem in increasing milk output? _
(1=do not have a cow, 2=lack of fodder or land for fodder, 3=lack of time/labour to collect fodder, 4=lack funds for buying pumba, 5=lack knowledge of good dairy farming, 6=lack funds for veterinary services, 7=lack funds for buying another cow, 9=do not know)

If respondent has no land, skip to A218, next page.

A203 Since you married (=acquired your resident plot) have you experienced any change in the ability of the soil of your hanana shamha to provide sufficient yields of hananas? _
(1=yes, soils have improved, 2=soils have declined, 3=no significant change, 9=do not know)

A204 Since you married (=acquired your resident plot) have you experienced any change in the ability of the soil to provide sufficient yields of other food crops, for example maize, beans, vegetables etc? _ (1=yes, soils have improved, 2=soils have declined, 3=no significant change, 4=do not grow other food crops, 9=do not know)

If improved soils or no change, skip to A208,

If declining soil fertility in A203 or A204, ask:

A205 What do you think is the main reason for declining soil fertility in your case? _
(1=Soil erosion/run off, 2=lack of manure, 3=lack of chemical fertilizer, 4=lack of mulching/compost manure, 5=too much cultivation, 6=less rainfall now than before, 7=other, 9=do not know)

If "other" ,specify: A206 Other reasons _____

If soil erosion (1), also ask:

A207 What is your main reason for not preventing soil erosion? _
(1=lack knowledge/proper advice, 2=lack labour, 3=lack time, 4=not worth the effort, 5=other, 9=do not know)

A208 Looking at your own farm, what is your major problem in relation to improving the overall output from your existing land?

A209 Counting all your plots mentioned, and including the plot around your house, on how many acres did you grow maize as the main crop in the village in the past season?

___, ___ acres

If no cultivation of maize in the village, skip to A218, next page

If yes, A210 How did you fertilize your maize plots? ___

(1=cattle manure, 2=chemical fertilizer, 3=both manure and chemical fertilizer, 4=mulching only, 5=other method, 6=no fertilization, 9=do not know)

If no chemical fertilizer, skip to A212 next page

If chemical fertilizer was used, ask:

A211 When was the first time you used chemical fertilizer on your maize? ___ (year)

A212 Why did you not use chemical fertilizer? ___

(1=not available nearby, 2=too expensive, 3=no need to use, 4=other, 9=do not know)

A213 What kind of maize seeds did you use in the past season? ___

(1=local maize only, 2=hybrid maize only, 3=both local and hybrid maize, 9=do not know)

If no hybrid maize, skip to A216

If hybrid maize,

A214 The hybrid seeds you used, were they purchased new or were they taken from the previous harvest? ___ (1=purchased new, 2=from previous harvest, 3=both new and reused, 9=do not know)

A215 When was the first time you used hybrid maize? ___ (year)

A216 Why did you not use hybrid maize? ___

(1=not available nearby, 2=too expensive, 3=lack inputs of fertilizers and chemicals, 4=other, 9=do not know)

(1=not available nearby, 2=too expensive, 3=lack inputs of fertilizers and chemicals, 4=other, 9=do not know)

A217 Since you married (=acquired your resident plot) have you experienced any change in the returns of maize per acre? ___

(1=yields have increased per acre, 2=yields have declined, 3=no significant change, 9=do not know)

Land use in the lowlands:

A218 Counting all your cultivated plots in the lowlands, on how many acres in total did you grow maize in 1996? ___, ___ acres

If no cultivation in the lowlands, finish interview here.

A219 How did you fertilize your (major) maize plots? ___

(1=cattle manure, 2=chemical fertilizer, 3=both manure and chemical fertilizers, 4=mulching only, 5=other methods, 6=no fertilization, 9=do not know)

If no chemical fertilizer, skip to A222

If chemical fertilizer,

A221 When was the first time you used chemical fertilizer on your maize? ___ (year)

A222 Why did you not use chemical fertilizer? ___

(1=not available nearby, 2=too expensive, 3=no need to use, 4=other, 9=do not know)

A223 What kind of maize seeds did you use? _
 (1=local maize only, 2=hybrid maize only, 3=both local *and* hybrid maize, 9=do not know)

If no hybrid maize (1 or 9), skip to A226

If hybrid maize,

A224 The hybrid seeds you used, were they purchased fresh or replanted from previous harvest? _ (1=purchased new, 2=from previous harvest, 9=do not know)

A225 When did you use hybrid maize the first time? _ _ (year)

A226 Why did you *not* use hybrid maize? _ (1=not available nearby, 2=too expensive, 3=lack necessary other inputs, 4=other, 9=do not know)

A227 Since *you* started cultivation in the lowlands have you experienced any change in the ability of the soil to provide sufficient yields of maize? _ (1=yes, soils have improved, 2=soils have declined, 3=no significant change, 9=do not know)

A228 Since you first cultivated maize in the lowlands have you personally experienced any change in the returns of maize per acre? _
 (1=yields have increased per acre, 2=yields have declined, 3=no significant change, 9=do not know)

A229 What do you think is the main reason for declining yields in your case? _
 (1=Soil erosion/run off, 2=lack of manure, 3=lack of chemical fertilizer, 4=lack of mulching/compost manure, 5=too much cultivation, 6=less rainfall/water now than before, 7=lack of proper weeding, 8=other, 9=do not know)

If "other" ,specify: A229 Other reasons _____

If soil erosion (1), ask:

A231 What is your main reason for not preventing soil erosion? _
 (1=lack knowledge/proper advice, 2=lack labour, 3=lack time, 4=not worth the effort, 5=farm too far away, 6=other reasons, 9=do not know)

A232 What did you do with crop residues (maize stems) after harvest? _
 1=remained on field for mulching, 2=remained on field for grazing, 3=removed for fodder in home village, 4=removed for sale, 5=removed for other purposes, 9=do not know)

A233 Looking at your cultivation in the lowlands, what is your major problem in relation to improving the overall output from your existing land?

Thank You

Appendix III:

Sampling procedures and analysis

The basic sampling unit was the household. Sampling of households was made in three steps:

- 1) constructing and stratifying the sampling frame
- 2) sampling of subvillages (Primary Sampling Units, PSU)
- 3) sampling of households (Secondary Sampling Units, SSU)

Step 1: Identifying and stratifying the sampling frame

The original sampling frame consisted of all households within the Meru part of the coffee-banana belt. As a *first step* it was decided to stratify the sampling frame according to geographical location: households of *northern/mountain villages* and households of *southern/road villages*, respectively. This step was based on information that had surfaced from interviews with key informants, and implied that distance from the main road was a differentiating factor with respect to central variables, such as land-use, income, human reproduction, migration, wealth, education, etc. The resulting two sampling frames were of approximately the same size and corresponded to about the same number of villages.

As no registry of households existed, it was not possible to draw a simple random sample (SRS) of households from each of the two sampling frames. Therefore, sampling was done in two stages. The natural choice of Primary Sampling Units (PSU) appeared to be villages. However, since several villages had large populations, there were practical reasons for choosing as PSU a minor administrative unit. It was found that subvillages better than villages would facilitate both the cross-checking of information collected and the subsequent wealth-ranking of households. Both these considerations required as PSU an area small enough to ensure that respondents (household heads) had basic knowledge about each other. These criteria could be met for subvillages, but not for villages.

Since the survey was to cover rural Meru households, from the sampling frame were excluded subvillages that constituted townships (Tengeru and Usa River) and institutes (e.g. colleges, hospitals, missions, etc.). Singisi village had already been selected as a pilot study village because of its position as the most landshort village in Meru. Its four subvillages (no. 01-04 in Table 1) were added to the subvillages drawn in accordance with the sampling design described below. For the subsequent analysis of survey data, the fact that the Singisi subvillages were sampled with a probability equal to one was taken into account.

With Singisi and the 'townships' excluded from the sampling frames, the 'Road/Southern' sampling frame consisted of 35 subvillages and held about 53 % of the entire household population, and the 'Mountain/Northern' sampling frame was made up of 40 subvillages which corresponded to 47 % of the population.

Step 2: Sampling of subvillages (PSUs)

The second step of sampling households was the *sampling of subvillages or PSUs*. This posed some initial problems. First, preliminary inquiries revealed that the household population varied considerably between different subvillages (from about 60 to 300). This circumstance called for a sampling design that both could ensure that the sample permitted unbiased estimation, and at the same time gave a sample that allowed wealth rankings of sampled households in all selected villages. These criteria should preferably be combined with the smallest possible error of variable estimates. The sampling design also had to fit the overall time and funds allocated to the survey.

It was found that the two-stage sampling technique referred to in the literature as "*Probability Proportional to Size Without Replacement*" (*PPSWOR*), here simply called PPS, met these criteria.¹ In the first stage of PPS, PSUs (i.e. subvillages) are sampled with probabilities proportional to size. In the second stage, a fixed number of secondary sampling units, SSUs (i.e. households), are selected from each of the sampled PSUs. In this way, PPS produces a self-weighting sample, provided the sizes of the PSUs are known or can be correctly estimated. 'Self-weighting' implies that an obtained sample mean is an unbiased estimator of the population mean.²

A second complication was that the sizes of PSUs (subvillages) were not known. Information on population size and number of households was only available at *village* level, and derived from the 1988 National Census. This problem was 'solved' by estimating the population sizes in all subvillages. Approximations were arrived at through a) existing data of village populations (1988 National Census), which were extrapolated to include the expected growth in population since 1988 (30 %), and b) judgements of subvillage population sizes by leaders from respective villages.

These estimates being completed, *eight subvillages* were drawn through PPS (four from each sampling frame) (no. 05-12, Table 1).³ To these were added the four subvillages of Singisi village. The actual sampling was made from a list with the estimated population of

1 G. Kalton, *Introduction to survey sampling* (1983), p 38ff. See also W. Cochran, *Sampling Techniques* (1953), p 234ff, and F.J. Fowler, Jr. *Survey Research Methods* (1984), p 28-29, the latter referring to the technique as 'Area probability sampling'.

2 G. Kalton, 42; F.J. Fowler, 31. Self-weighting implies that the probability of selecting a subvillage times the probability of selecting a household from a selected subvillage should be the same for all households. This can be achieved by sampling PSUs (subvillages) with probabilities proportional to their sizes, and by sampling a fixed number of SSUs (households) from each selected PSU.

3 A PPS based on *estimated* size of PSUs is by Kalton labelled PPES (probability proportional to estimated size), p 42.

the subvillages formed as a cumulative sum across the sampling frame. From each sampling frame were then drawn four subvillages by way of matching four randomly produced numbers with their corresponding subvillages.⁴

Why PPS?

The question needs some further attention since PPS in this particular study required more work as compared to the alternative method of sampling subvillages through simple random sampling (SRS).⁵ In contexts where prior information on PSUs or PSUs is lacking, the use of a PPS sampling design necessarily implies that the size of PSUs has to be estimated, as was the case in this study. In this process, the risk of obtaining a non-self-weighting sample due to wrong estimates of PSUs must be taken into account. Some colleagues brought my attention to these considerations and proposed as an alternative strategy the more conventional and straight-forward option of sampling PSUs through SRS, since such a strategy does not require any prior knowledge of subvillage sizes. No doubt, this would have been a less cumbersome path given the mentioned difficulties of estimating the size of PSUs.

Still, I held on to PPS. There were two main reasons: First, PPS promised to yield a higher degree of precision of variable estimates than any other feasible alternative.⁶ Secondly, and this was the main reason, since PPS implied equal sample sizes of SSUs (households) in all selected PSUs (subvillages), and equal sizes guaranteed a smooth wealth ranking of households, PPS was preferred over SRS. Since household ranking constituted a central component in overall data collection and triangulation, it was to a large extent decisive in the choice of survey and sampling design.⁷

Step 3: sampling of households (SSUs)

Sampling of households for survey interviews was the final step in the sampling procedure, and the second stage in the PPS sampling design. At this stage there were two problems.

-
- 4 In the southern sampling frame the sum of the estimates of population size was 5 301 households. With a computer, four random numbers between 1 and 5 301 were drawn. Suppose the first number was 1,283. This number would then correspond to Nkomalai subvillage which covered numbers 1,261 to 1,360 in the cumulative count of populations on the list of subvillages. In this manner four random numbers were drawn and four subvillages selected. In the case a subvillage was selected more than once, a new random number was generated until four different subvillages had been selected. This latter procedure is in statistical language called 'sampling without replacement' or, more precisely, 'successive sampling without replacement'.
 - 5 In an SRS design, all PSUs have equal probabilities of being selected in the first stage. In the subsequent stage, households are selected so that the same fraction of households is sampled from each subvillage. This technique ensures the entire sample to be self-weighting.
 - 6 W. Cochran, 292-318; Fowler, 29.
 - 7 Grandin (1988), in her '*Wealth Ranking in Small Holder Communities; A field Manual*', recommends ranking of no less than 50 and no more than 100 units, a recommendation which influenced the sample design of this study.

The first one was to obtain a list of heads of household from the selected subvillages. The second problem concerned *how many* households should be sampled, and by *what* technique.

In only one subvillage existed a list of households that could be updated (Mura wa Iwen). In all other subvillages, household censuses were carried out to provide up-dated household lists. In most cases the village secretaries did this work, except in Singisi where the census work was done jointly by primary school teachers and members of village government. Census information included name, sex, and marital status of the household head.

For practical and logistic reasons, and to facilitate wealth rankings, it was decided to have a sample size of between 55 and 60 households per subvillage (the actual mean was 58).⁸ Sampling technique was systematic sampling, which in this case was equivalent to simple random sampling.⁹

In addition to households systematically sampled, there was a total selection of female headed households, widows excluded, who were reported to 'own' land. Because of the small total number of these households, they tended not to become selected from the systematic sample. By selecting them all, they were ensured participation in the survey (Table I).

8 Singisi village is an exception where earlier about one third of all households had been sampled.

9 First, the ratio of selection was decided, for example every fifth household. A number between 1 - 5 was then drawn randomly, and departing from that number every fifth household was selected. The actual sample size varied somewhat, partly because the preferred sampling interval or ratio was an integer that most conveniently could divide the population total to produce a number between 55 and 60, partly because of non-response (household drop-outs). In the case of Mura wa Iwen subvillage, however, only 52 households were sampled. Due to these variations, the self-weighting character of the sample became somewhat altered, a circumstance that made apparent the need for some kind of retrospective correction, i.e. a 'weight' factor attached to each sample unit.

Table 1: Sampled subvillages, household population, sample size, and female 'land owners'. (S=south/road area, N=north/mountain area).

Subvillage	Household population (N)	Actual sample size (n)	Total no. of female 'land owners'
01 - Sin/Mavinuni (S)	263	82	3
02 - Sin/Maringa (S)	179	55	0
03 - Sin/Nsitoni (S)	305	95	4
04 - Sin/Kyaraa (S)	212	68	1
05 - Nkoambiaa (S)	98	57	1
06 - Njoro (S)	189	58	0
07 - Kirima (S)	134	57	2
08 - Ndoombo (N)	160	59	4
09 - Kyuta (N)	62	62	0
10 - Nkoanekoli (N)	102	53	2
11 - Mura wa Iwen (S)	157	50	3
12 - Seela Kati (N)	244	57	1
Total	2 093	753	21

Complications...

Due to the variation in actual sample size (the range was from 50 to 62), it was foreseen that, at the time for survey analysis, a minor correction would be needed to handle the bias this entailed. In practice this meant the retrospective employment of a weight factor aligned to the household units of different subvillages.¹⁰ This anticipated problem, however, was overtaken by another one. It turned out that the estimates of subvillage household populations (N*) in some cases diverted substantially from the figures obtained through the censuses (N). This diversion had to an unknown extent skewed the sampling probabilities for some subvillages. More important, it constituted a serious bias regarding the representativity of the sample vis-à-vis the population. Instead of a foreseen correction of a minor variation in actual sample size, I found myself dealing with major deviations from the conditions of a self-weighting sampling design. In general, estimates of subvillage population size and number of households had been exaggerated (6 out of 8, Table 2). The most extreme case

10 Such a weight could be, for example, the ratio $58/n$ (target sample size divided by actual sample size) which converts all units to the 'target' sample size of '58', the mean actual sample size. A discussion of weights is found in, for example, Lee et al, *Analyzing complex survey data*, pp 16-21. See also Kalton, 69-75.

was Nkoambiaa subvillage with a household population that in reality was only half of its estimated size.

The conventional procedure to correct for wrong size estimates would have been to multiply the target sample size with the ratio N/N^* , where N is the correct subvillage size and N^* is the estimated size.¹¹ If the sizes of the PSUs had been overestimated, the corresponding new SSU sample size would have been reduced; if underestimated, the new sample size would have been enlarged (Table 2).

Table 2: *Estimated and recorded number of households in sampled subvillages, and their diversions. Actual and corrected sample size.*

Subvillage	Estimated number of households (N^*)	Recorded number of households (N)	Ratio est./real	Actual sample size (target $n=58$)	Corrected sample size ($n \times N/N^*$)
05 Nkoambiaa	200	98	2.04	57	27.9
06 Njoro	250	189	1.32	58	43.8
07 Kirima	230	134	1.72	57	33.2
08 Ndoombo Kati	150	160	0.94	59	62.9
09 Kyuta	90	62	1.45	62	42.7
10 Nkoanekoli	170	102	1.66	53	31.9
11 Mura wa iwen	190	157	1.21	50	41.3
12 Seela Kati	220	244	0.90	57	63.2

It was found, however, that following this procedure would have resulted in corrected sample sizes that in several cases would have been too small to yield reliable data on wealth rankings (see Table). At this point, bearing in mind the described shortcomings, and weighting one argument against the other, I decided to hold on to the original sample size, hoping that a retrospective application of weights would be sufficient to produce unbiased sample estimates without a great loss of precision.

This being said, the issue deserves some additional attention, not least because it raises questions about a) what kind of weights that should be applied, b) the loss of precision of variable estimates due to the diversions described, and c) if alternative sampling designs (e.g. SRS) would have yielded a better precision. I will deal with b) and c), below, and then proceed with a discussion of a), the problem of disproportionate sample sizes (e.g. weights).

11 Fowler, 30. Kalton 42ff. According to these authors, it is common that the estimated size of PSUs is somewhat off hand, and is corrected according to described procedures to ensure a self-weighting sample.

The questions on precision and sampling designs cannot be fully answered unless full-scale surveys are repeated according to different designs. However, it is possible to reach a plausible conclusion by comparing the outcomes of different sampling designs under the controlled conditions of a computerised experiment. An experiment was therefore set up with a sampling frame of 40 villages.¹² Half the number of villages were of the size 50 households, half of the size 200. Each household was given a value of a fictitious variable, 'the number of children per household', and village means and standard deviations were calculated. The population mean was chosen to be exactly 4.

Three alternative designs for sampling subvillages were investigated, one being SRS, another being a PPS with incorrect village estimates (to resemble the situation of the Meru survey), and the third being PPS with correct estimates. The crucial question was: which one of these designs would give the most accurate estimate of the true value of the population, in this case 4 children per household?¹³

Since the loss of precision, and the position of an 'incorrect' PPS vis-à-vis other designs, ultimately depends on *how much* the estimated sizes divert from the correct ones, it was decided in the experiment to exaggerate the differences between the correct and incorrect estimates so that they extended the differences encountered in the real survey done in Meru. Specifically, while it was assumed that small villages were estimated correctly, the 20 villages of size 200 was in the 'incorrect' PPS design underestimated to be half their real size ($N^* = 100$).

Each of the three sampling designs drew 4 villages from the sampling frame in the first stage, and in the second stage, drew a total of 104 households from the selected villages. For the two PPS designs this meant 26 households per sampled village. For the OSU design, it meant on the average 41.6 households per large village, and 10.4 per small one. This sampling procedure was repeated 1,000 times.¹⁴

12 I am grateful to Professor Jan Lanke at the Department of Statistics, Lund University, for attending to this problem, and for his design, execution, and evaluation of the experiment.

13 The PPS with incorrect size estimates was 'corrected' to become self-weighting by assigning 'weights' to each sample unit. Weights were derived from the 'inclusion probabilities' of the PSUs. (For an explanation of this procedure, see the next section: 'Variable estimates by use of weights'.) This correction was in line with the actual steps taken in the real survey to ensure that sample estimates remained unbiased. The question examined here is the loss of precision from this procedure as compared to a PPS with correct size measures, and the SRS option. See also footnote 17.

14 The experiment was set up so as to produce samples from the desired sampling designs, and at the same time enable *to the extent possible the same* villages and households to appear in all three samples. The latter aspect holds an important point. By comparing the *same* villages and households in all three survey designs, the influence of random factors (=extreme values) for producing differences between the sample designs would be minimized, and whatever differences that could be observed would thus more likely reflect true differences between the three sample designs.

The results are presented in Table 3. Quite expectedly, PPS with correct size measures had the smallest standard deviation. Also the 'incorrect' PPS, however, in spite of its gross errors in the village size estimates, turned out to be fairly accurate, and more accurate than the SRS design. The general conclusion to be drawn is that the more accurate the estimations of PSUs in a PPS design, the better. However, a PPS with incorrect estimations, even when mistakes are substantial, is often a better alternative than a design based on SRS alone.¹⁵

As for the survey in Meru, it can be concluded from the experiment that the observed deviations between estimated and real sizes of subvillages have produced some, albeit small, loss of precision as compared to the textbook version of PPS. In spite of this loss it can be concluded that, from the point of view of precision, an SRS design would have been no alternative to handle the problem of insufficient information on subvillage populations in the preparatory stage of the survey.

Table 3. Results of the experiment comparing the standard deviations of different sampling designs, 1 000 repetitions.

Sampling design	St.dev. (s)
PPS, correct estimates	0.417
PPS, incorrect estimates	0.424
SRS	0.471

Variable estimates by use of weights.

I will here deal with the consequences of the disproportional household sample sizes and the incorrect estimates of subvillage sizes, referred to as a) in the discussion above, both of which resulted in the overall sample being non-self-weighting.

In order to make unbiased estimates, it was necessary to launch some kind of retrospective correction of this imbalance. Also, since Singisi households were over-represented in the sample, it was necessary to 'downplay' Singisi subvillages vis-à-vis the sample as a whole.

To solve these problems, the statistical concept of 'inclusion probabilities', π , was introduced.¹⁶ The 'inclusion probability' of a particular subvillage, '*i*', is the probability that the

15 A similar comparison between sampling designs is made in W. Cochran, *Sampling Techniques*, 292ff. Although the details of the comparison set-up differ, the results are consistent with what was found in the experiment described here. Results are summarised in Cochran, Table 11.4, p 299. The conclusion is that a PPS with correct size measures (in Cochran's comparison labelled Method III), is better than a PPS with incorrect size measures (Method IV), which in turn is far better than a SRS (Method II). Interestingly, Cochran notes that the precision (variance) of an incorrect PPS which has *not* been corrected for its bias (Method V), shows a precision almost as good as a correct PPS. However, estimates from such an incorrect PPS, albeit more precise, are biased vis-à-vis the population, and are therefore hardly realistic alternatives in the context of this study.

sample will contain that subvillage. While the sum of *sampling* probabilities, 'p', for all PSUs in the sampling frame equals 1, the sum of *inclusion* probabilities is equal to the number of units selected. In this case the sum of all π :s equals 4, since four villages were sampled from each sampling frame.

The actual π :s for the sampled subvillages were derived from a computer simulation of sampling four villages with the actual sampling probabilities 'p'. In all, 10 million repetitions gave π values +/- 0.0002 (95 % confidence interval); results are given in Table 4. In order to estimate the precision (e.g. variance) of concerned variable estimates, we calculated the probability that both subvillage 'i' and subvillage 'j' were included in the sample, e.g. π_{ij} . These probabilities were derived from the same computer simulation as above and are given in Table 5. They are applied in the formula (8) used for estimating the variances of concerned variable estimates (page 11).

The overall aim was to generate reliable estimates that in an unbiased way could reflect the situation for the population as a whole. Horvitz and Thompson, in 1952, demonstrated that a variable value y_i (assumed known) for village 'i', when divided by π_i for that village, and added over all sampled villages, will give an unbiased estimate of the population total of Y:

$$(1) Y_{\text{total}} = \sum_{i \in s} y_i / \pi_i^{17}$$

In the more complicated case where y_i is not known, but estimated, the total of Y in the population can be estimated from the subvillage sample mean of y (y_{mi}). This mean is then multiplied with the total subvillage population (N_i) and divided by π_i . Adding up the four ratios (one for each sampled subvillage) results in an estimate of the total Y for the population. The formula is:

$$(2) Y_{\text{total}} = y_{m1} \cdot N_1 / \pi_1 + y_{m2} \cdot N_2 / \pi_2 + y_{m3} \cdot N_3 / \pi_3 + y_{m4} \cdot N_4 / \pi_4.$$

In order to estimate the population *mean* of Y (for example cultivated area per household), which is our prime interest here, we also need to estimate the total number of units (i.e. households) in the population, so that we can divide the obtained total area estimate (Y_{total}) with this estimate. The estimate (N_{total}) of the total number of households is obtained according to the principle outlined above. This tells us that N_{total} is the sum of the population of the four sampled subvillages (N_i), when each one of them is divided by its corresponding π_i

$$(3) N_{\text{total}} = N_1 / \pi_1 + N_2 / \pi_2 + N_3 / \pi_3 + N_4 / \pi_4.$$

16 The use of this technique for obtaining unbiased estimates was suggested by Professor Jan Lanke at the Department of Statistics, Lund University, and to whom I am grateful. It is described, for example, in Horvitz, D.G and Thompson D.J.; *A generalization of sampling without replacement from a finite universe; Journal of American Statistical Association* 47, 663-685 (1952). See also Cochran, *Sampling Techniques*, 259-261.

17 Horvitz, D.G and Thompson D.J.(1952); 663-685.

With the estimates of the population totals of Y and N obtained, we are now ready to estimate the population mean of Y (in our example the mean cultivated area per household). The resulting equation is a ratio between two Horvitz-Thompson estimates. The numerator is an estimate of the population total of Y (e.g. total area under cultivation), and the denominator is an estimate of the entire number of units in the population (N_{total}) (e.g. total number of households). The formula will read:

$$(4) Y_{m-total} = Y_{total}/N_{total};$$

$$Y_{m-total} = \frac{(y_{m1} * N_1/\pi_1 + y_{m2} * N_2/\pi_2 + y_{m3} * N_3/\pi_3 + y_{m4} * N_4/\pi_4)}{N_1/\pi_1 + N_2/\pi_2 + N_3/\pi_3 + N_4/\pi_4}$$

From this discussion we have seen that, in order to make estimates regarding the population, we must consider the ratio N_i/π_i . We noted that when this ratio is added up for each of the sampled *subvillages*, the sum is an estimate of the total population. We also noted that when N_i/π_i is multiplied with the subvillage mean of a variable (y_{mi}), the sum of these products is an estimate of the variable total in the population.

Table 4: *Subvillage household population, sample size, inclusion probabilities and 'weights'.*

Subvillage	Household population (N)	Actual Sample size (n)	π	N/ π	'Applied Weight' N/ ($\pi \cdot n$)
01 - Mavinuni (S)	263	82	1.0	263	3.17
02 - Maringa (S)	179	55	1.0	179	3.25
03 - Nsitoni (S)	305	95	1.0	305	3.21
04 - Kyaraa (S)	212	68	1.0	212	3.12
05 - Nkoambiaa (S)	98	57	0.1505	651.16	11.42
06 - Njoro (S)	189	58	0.1854	1019.42	17.58
07 - Kirima (S)	134	57	0.1718	779.98	13.68
08 - Ndoombo (N)	160	59	0.1249	1281.02	21.71
09 - Kyuta (N)	62	62	0.0764	811.52	13.09
10 - Nkoanekoli (N)	102	52	0.1403	727.01	13.98
11 - Mura wa Iwen (S)	157	50	0.1435	1094.08	21.88
12 - Seela Kati (N)	244	57	0.1784	1367.71	23.99

The computational procedures and statistical analysis were carried out with SPSS program. It was found that these procedures were simplified by the use of the following weights. When multiplying N_i/π_i with $1/n_i$, we obtain weights that can be applied to the sampled

household units of respective subvillage, and which compensate for the variation in actual sample size. When applying these weights, the sum of all weighted individual household values of a variable (y_{hi}) is an estimate of the population total (Y). When Y is divided by the sum of the similarly weighted number of selected households, which now is an estimate of the total household population, the result is an unbiased sample estimate of the population mean.

Table 5: Inclusion probabilities for both subvillage 'i' and subvillage 'j', π_{ij} .

Sub-village no.	1	2	3	4	5	6	7	8	9	10	11	12
1	-	1.0	1.0	1.0	0.1505	0.1854	0.1718	0.1249	0.0764	0.1403	0.1435	0.1784
2	-	-	1.0	1.0	0.1505	0.1854	0.1718	0.1249	0.0764	0.1403	0.1435	0.1784
3	-	-	-	1.0	0.1505	0.1854	0.1718	0.1249	0.0764	0.1403	0.1435	0.1784
4	-	-	-	-	0.1505	0.1854	0.1718	0.1249	0.0764	0.1403	0.1435	0.1784
5	-	-	-	-	-	0.0220	0.0203	0.0188	0.0115	0.0211	0.0169	0.0268
6	-	-	-	-	-	-	0.0252	0.0232	0.0141	0.0260	0.0209	0.0331
7	-	-	-	-	-	-	-	0.0215	0.0131	0.0241	0.0194	0.0306
8	-	-	-	-	-	-	-	-	0.0073	0.0136	0.0179	0.0176
9	-	-	-	-	-	-	-	-	-	0.0083	0.0109	0.0106
10	-	-	-	-	-	-	-	-	-	-	0.0201	0.0197
11	-	-	-	-	-	-	-	-	-	-	-	0.0256
12	-	-	-	-	-	-	-	-	-	-	-	-

It should be noted that the weights referred to build on the household as the sampling unit. This case is rather straightforward since the total number of households is known per sampled subvillage. However, a number of variables are linked to individuals as study units (i.e. individuals within households), for example 'the number of children per woman', 'educational level', 'marital or occupational status', and so on. The complication here is that the number of individuals or units (X) per subvillage is not known, but must be estimated.

For example, in the case where we wish to estimate the average number of children per woman, CH_m , the procedure will be as follows: Let y_{mchi} denote the mean number of children per household in the sampled subvillages, and let Y_{ch} be the estimated total number of children in the population. As described earlier, Y_{ch} is then equivalent to the sum of all means when each mean is multiplied by the ratio N_i/π_i ;

$$(5) Y_{ch} = y_{mch1} \cdot N_1/\pi_1 + y_{mch2} \cdot N_2/\pi_2 + y_{mch3} \cdot N_3/\pi_3 + y_{mch4} \cdot N_4/\pi_4;$$

In order to estimate the average number of children per woman, we now need to divide Y_{ch} with the total number of women in the population, denoted by X_{wom} . Unlike households, the number of women per sampled subvillage is not known but must be estimated. We will

treat women as a household attribute, deriving the total from the mean number of women per sampled household, x_{m1} , following the same procedure as before. The estimate is then obtained by adding the means multiplied by the N_i/π_i ratio for the sampled subvillages:

$$(6) X_{\text{wom}} = x_{m1} \cdot N_1/\pi_1 + x_{m2} \cdot N_2/\pi_2 + x_{m3} \cdot N_3/\pi_3 + x_{m4} \cdot N_4/\pi_4.$$

The average number of children per woman is then estimated by:

$$(7) CH_m = Y_{\text{ch}} / X_{\text{wom}}.$$

Precision of estimates

In the previous section I presented a way of obtaining variable estimates that took into consideration the specific characteristics of the sampling design used in this study. The natural question, then, is to ask how precise are such estimates? From the experiment comparing different sampling designs, we concluded a certain, albeit small, loss of precision due to incorrect estimates of PSU, as compared to the ideal PPS design. More generally, however, the main consideration in respect of data precision here, is the effect of multi-stage sampling designs as such. While most statistical procedures are designed for one-stage simple random samples, in reality, most large surveys are multi-stage designs due to economic or logistic reasons.¹⁸ This constitutes a problem for tests of hypothesis and construction of confidence intervals. As stated by Kish already in 1956, "*In the social sciences the use of s.r.s. formulas on data from complex samples is now the most frequent source of gross mistakes in the construction of confidence statements and tests of hypothesis.*"¹⁹

The problem of multi-stage sampling is that the ultimate sampling units (e.g. households or individuals) within clusters or PSUs (e.g. subvillages) tend to resemble one another on variables that are related to traits of the PSUs (e.g. residence). This homogeneity of respondents within clusters "...destroys the independence of the characteristics of the sample elements.", and as a consequence undermines the unrestricted use of parametric tests that assume SRS.²⁰ In general, one must expect a larger standard error with a complex sampling design as compared to SRS. This appears to be the case also in the survey completed here, where all sample units derive from only four PSUs per sampling area. Then, what can be concluded about the precision of survey data in this particular case?

Once a multi-stage survey has been completed, there are basically two ways to handle or estimate this 'design effect'. Either, one can apply a general correction factor to the standard error obtained under assumption of SRS, or one can try to calculate the variance for the particular design and for different variables. Kieholt and Nathan, for example, note that "...an accepted convention to adjust for the 'cluster effect' has been to multiply the standard error generated for a random sample by a correction factor of 1.25 or 1.3."²¹ Alternatively, according to

18 Also, computer package programs such as SPSS assume simple random sampling for tests of significance and precision of estimates.

19 Kish (19..), 155

20 *ibid.* 154. See also Kieholt and Nathan, *Secondary Analysis of Survey Data* (1985), 69ff.

21 Kieholt and Nathan, 70.

the same authors, one may use the standard error obtained, but pretend the sample is two-thirds its real size.²² Hellevik, on the other hand, in referring to Davis (1975), proposes that a confidence interval obtained in cluster sampling should be increased with a factor 1.5.²³

Needless to say, such general corrections take little notice of the specifics of each sampling design, nor do they differentiate between variables that are more prone to 'cluster effects', and those that are only marginally affected. A better way, then, is to calculate the actual variance for each of the central variables in the sample. In this, there is a variety of methods.²⁴ The method used here considers the situation of varying sampling probabilities, as discussed. It builds on the 'inclusion probabilities' presented in the previous section. The formula, developed using Taylor linearisation, will estimate the total variance of an estimate under consideration.²⁵ It consists of two components which reflect the uncertainty occurring from the non-total investigation of primary sampling units (A) and secondary sampling units (B), respectively. When added and divided by the squared estimate of the total household population (N^*), these components will yield an estimate of the entire variance of the considered estimate.²⁶ The formula is:

$$(8) V^*\{R^*\} = 1/(N^*)^2 * \{A + B\}; \text{ where } V^*\{R^*\} \text{ is the total estimated variance for the estimated value of variable 'R';}$$

or

$$V^*\{R^*\} = 1/(\sum_s N_i / \pi_i)^2 * \{1/2 \sum (\pi_i \pi_j / \pi_{ij} - 1) (z_i^* / \pi_i - z_j^* / \pi_j)^2 + \sum_s \sigma_i^{*2} / \pi_i\};$$

where s is the sample; N_i is the number of households in subvillage 'i'; π_i is the probability that subvillage 'i' will be included in the sample; π_{ij} is the probability that subvillages 'i' and 'j' both will be included in the sample; σ^* is the standard error of the estimated total of 'y' in subvillage 'i'; z_i^* is equivalent to $\sigma y_i^* - R^* N_i$ where y_i^* is the estimated total of a variable (y) in subvillage 'i'. Instead of σ_i^{*2} , which is the variance for the estimated total of 'y', we use the sample variance, ' s_i^2 ', multiplied by the factor ' $N_i^2/n_i (1 - n_i / N_i)$ ', where $(1 - n_i / N_i)$ is a correction factor for sampling without replacement.

The major contributor to the size of the variance estimator is 'A' (e.g. primary sampling units (PSU)) which is about 20-40 times greater than 'B' (e.g. secondary sampling units (SSU)) depending on the variable examined. The greater uncertainty contribution from 'A'

22 *ibid.* 70.

23 Hellevik, Introduction to Causal Analysis, 110 (1984), referring to J.A. Davies, Analyzing contingency tables with linear flow graphs: d-systems' in D. Heise (ed), *Sociological Methodology 1976*, 128-9.

24 Most methods of variance estimation in multi-stage sample designs are based on different kinds of repeated sampling of subsamples, for example the 'Balanced Repeated Replication' method or the 'Jackknife Repeated Replication', described in Lee et al, *Analyzing complex survey data*, 23-40. See also Kalton, 75-81; and Cochran 318-26.

25 For Taylor linearisation, see Särndal, Swensson, Wretman (1992), *Model Assisted Survey Sampling*, p 172 ff.

26 Professor Jan Lanke, Dpt of Statistics, University of Lund; personal communication

has to do with the fact that roughly only one out of ten PSUs were sampled, while the SSU sampling fraction was much larger.²⁷

In the more complicated case, where the number of study units is not known but estimated (e.g. individuals), we need to consider not only the variance of the estimate under consideration ('Y') but also the variance of the number of study units ('X'), now estimated. We also need to calculate the covariance of 'Y' and 'X'. This operation will increase our overall uncertainty since the size of 'B' in our formula will be greater, and consequently the size of the total variance estimate. 'A', however, will still be much greater than 'B'.

Also in this case we will use s_z^{*2} instead of σ_z^{*2} . We obtain s_z^{*2} by the following formula:

$$(9) s_z^{*2} = 1/n_i - 1 \sum ((y_{ij} - R \cdot X_{ij}) - (y_{mi} - R \cdot X_{mi}))^2 .$$

As before we multiply s_z^{*2} with the factor $N_i^2/n_i (1 - n_i / N_i)$.

27 The average estimated size of land of the homesteads of four subvillages was found to be 1.15 acres. When estimating the variance of this estimate, it was found that the contribution of 'A' (primary sampling units) was 217,000 and the one of 'B' was 5,836. When added and divided by N^2 (3,545), the result was 0.0177. The standard error estimate, being $\sqrt{0.0177}$, was 0.133. With a 95 % confidence interval, the precision of the estimate was found to be 1.15 +/- 1.96 * 0.133, or (0.88, 1.41).

Appendix IV

Elaboration of the wealth ranking technique for assessing the rate of intergenerational mobility and consistency in rank.

Cash income and farm assets are essential wealth elements in most peasant societies, Meru being no exception. However, reliable and comprehensive records regarding such data as a rule do not exist. Nor is such data easily collected in the field. Moreover, the weight of different wealth criteria tends to change over time as conditions of livelihood change in society. Measuring wealth by cash income or farm size may thus have a different significance for different generations and cannot a priori be applied in a study where different generations are compared.

In view of these difficulties, we looked for a method that could inform us about the *relative* distribution of wealth on the basis of a number of criteria found valid by local members of the community. We found that the wealth ranking technique met this requirement. The wealth ranking method, as described by Grandin (1988), had been previously used in this research project for identifying local wealth strata and as a survey control instrument. On the basis of this experience, it was assumed that, under certain conditions, the technique also could be used for measuring and assessing intra- as well as inter-generational social mobility in peasant societies. For this purpose, we must know the age, at least approximately, of all village members, and, in the case of inter-generational mobility, we must also know how they are related to each other.

The age groups

Most of the villages studied in Meru were found to fit these requirements. We decided to investigate the situation in Mavinuni subvillage in Singisi village, a place we knew well from previous visits and where our research was well known among the villagers. We decided to investigate the mobility of male household heads, a choice that was motivated from the fact that the Meru define descent and residence on the male side.¹ In Meru, a comprehensive social institution, the age-set organisation (Swahili *rika*) served as the basic age indicator. The number of resident male household heads in the subvillage was found to be 191, according to a project census made in February 1995. Five age groups represented these heads whose mean ages we calculated by means of a conventional survey completed in the year before. They are given in Table 1.

1 Status as family or household head is acquired through marriage.

Table 1: Age groups, mean age 1995 (years)²

Age group	Mean age
Kisali	86,67
Sitimu	72,74
Seuri	56,86
Ultalala	40,43
Kakisha	29,37

We then listed the names of the members of the different age groups and asked a couple of well-informed villagers to identify their respective fathers, and grandfathers. Out of this exercise we identified *all* Kisali heads that presently were living or had been living in the subvillage. These were members of the oldest age group in the study, and of whom most are now deceased.³ This group of 46 Kisali fathers from Mavinuni subvillage constituted our 'ancestor' group. From them we reconstructed family trees containing brothers, sons and grandsons. The total number of villagers appearing in the study was 317, out of whom 310 were ranked. The resulting age group distribution is given in Table 2.

The family trees incorporated persons who had outmigrated or died. We decided to exclude from our study descendants who had migrated *out of the village* but to include those who had settled elsewhere *within* the village and who were known to the community. The exclusion of migrants was made on the basis that their whereabouts may not be well known and their wealth status cannot easily be reconstructed and compared against local criteria. Descendants who had died, however, were included on the assumption that their wealth would be remembered and could be compared with their age mates.

-
- 2 Mean age has been calculated on the basis of the entire survey sample for Singisi village in 1995/96, i.e. 237 male household heads. Since the survey, a new age group has emerged, the Kilowiyo, being the youngest group and the sons of the Ultalala members. To date, the Kilowiyo is represented by a few individuals only and is therefore ignored here.
 - 3 To the Kisali members were added a small number of Ultareto age group members who preceded the Kisali group, both groups being the fathers of mainly Seuri age group members.

Table 2: Age groups and number of members.⁴

Age group	Number	Percent
Kisali	46	14,5
Sitimu	40	12,6
Seuri	49	15,5
Ultalala	99	31,2
Kakisha	83	26,2
Total	317	100,0

Ranking procedures

As during earlier ranking exercises, the names of the household heads were written on cards, which were sorted into five piles, one for each age group. Meanwhile, a number of long-standing members of the village were recruited as ranking informants. During the rankings, the male informants engaged for the task divided each age group into smaller piles, reflecting the different wealth positions of the persons in that age group. The informants chose the number of such sub-piles according to their preferences (in most cases 5-7 piles were used), each pile containing heads of similar wealth and rank. In this way, the informants proceeded through the age groups until the persons in all five age groups had been ranked. For the analysis, and in order to compare the wealth of individuals from different age groups, obtained scores were standardised to fit a scale ranging from negative (poor) to positive values (rich) and with "0" as "mean" wealth.⁵

For this particular study, two different ranking approaches were employed. In the first approach, called 'tied' ranking, we let the *same* informants rank *all* age groups. Also, in this approach we engaged two informants for every round of ranking, one a Seuri member, the other an Ultalala member. They carried out the ranking jointly and complemented each other in estimating the relative wealth positions of their fellow villagers. It was assumed that the Seuri informant would know the older members of the community well, while the Ultalala informant would be better informed about the younger ones. To reduce the risk of sons being ranked according to the position of their fathers, it was stressed that informants should let the wealth of every household head 'speak' for itself. Also, the ranking occurred in

4 Given a fertility rate of about 3 % per year one would have expected a 'cone' shaped age structure with the youngest groups also being the most numerous. The Kisali age group is relatively big due to the inclusion of some Ultareto members. Seuri age group, on the other hand, is small compared to Kisali and Sitimu because of a high rate of outmigration among the members in this group who's family formation coincided with the expansion to the plains in 1950s and 60s. The youngest group, Kakisha, is relatively small, partly because many of their members are not yet married, and partly because, being the sons of Seuri, many of them have migrated to inherit land on the plains.

a sequence that presumably reduced this risk, starting out with the Seuri age group, then the Sitimu, followed by Kisali, Kakisha and Ultalala.

The ranking was completed when all five age groups had been divided and their corresponding wealth groups were laid out on a table. This, however, constituted the starting point for another important aspect of our collection of mobility data, namely to obtain a picture of social mobility and generation related stratification through the experience and views of the informants. With the different age and wealth groups displayed in front of them, informants were asked to elaborate on the reasons for their judgements, i.e. what factors made representatives of a certain wealth and age group/generation differ from individuals with similar rank in another age group/generation; how type and access to wealth had changed over generations, how it had manifested itself and so on. By way of this approach, we made four different rankings of all age groups using as many independent pairs of Seuri/Ultalala informants.

In our second ranking approach, we selected four informants from each age group and let them individually and independently rank their own age mates but no other age groups.⁶ This produced 20 independent rankings, four from each of the five age groups.

All in all, every household head had been subject to eight different rankings, four by each approach. These rankings were internally consistent, correlations between them ranging from 0.78 to 0.91. Occasionally, however, an informant would place a head in an odd position compared to the judgements of other informants. We concluded such 'outlier' rankings to be the result of mistakes or guesses by the informant or due to enumerator mistakes when recording the ranking. When the outliers exceeded a distance of two standard deviations from the mean of all rankings for a respondent, they were ruled invalid and their scores were replaced by the mean.⁷ Finally, when comparing the mean scores of the 'tied' and

5 Ranking scores were calculated in the following way. Theoretically, the highest possible score was equal to the number of valid rankings in the age group (N), i.e. for Kisali age group scores ranged from 1 to 46 since N=46. Individuals of the same wealth group received the same score defined as the median position or the 'mid-rank' for that group. For example, if five heads were placed in the first wealth group, these were defined as individuals 1 to 5. Their score, or 'mid-rank', was calculated as $(1+5)/2$ which is 3. This is a slight diversion from the method suggested by Grandin (1988), but one that is statistically more precise.

In order to compare individuals from different age groups which contained different number of heads, the individual scores (X) were standardised through the following equation; $z = (X-m)/s$, where m is the mean score and s is the standard deviation for the ranked age group. Through this procedure, standardised scores (z) appear as a distribution around value '0' which indicates 'medium' or 'average' rank. Negative scores imply positions poorer than average, positive scores imply wealthier ones. The 310 ranked respondents scored from -1.67 to +1.78. These 'standardised' scores made possible comparisons of ranking positions between, for example, fathers and sons, or brothers, located in different age groups.

6 Since almost all Kisali heads were dead, we let informants of the next age groups in turn, the Sitimu and Seuri, perform these rankings.

the 'independent' rankings, respectively, we found a correlation (r) of 0.96. As a result, we used for the analysis the overall mean ranking score, being the mean of all eight rankings employed for each of the household heads in the study, and with outlier cases excluded.

7 Outliers were identified through the following SPSS procedure. One at a time, all individual scores were run against the mean scores for all informants using regression analysis. Those cases which exceeded a distance from the regression line (the predicted value) of two standard deviations or more were excluded. In all, about five per cent or 127 out of 2 480 rankings were defined as outliers.

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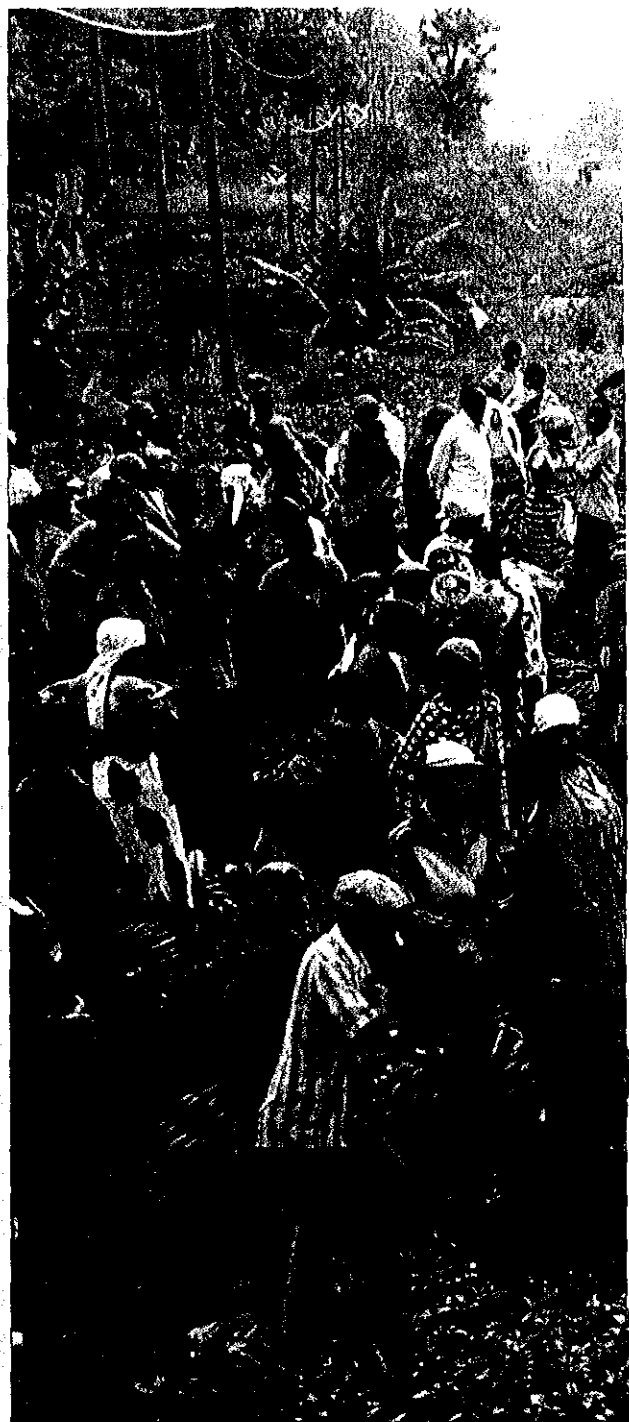
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